



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>Published <i>With international search report.</i></p> <p>(54) Title: (R)-CHIRAL HALOGENATED 1-SUBSTITUTEDAMINO-(n+1)-ALKANOLS USEFUL FOR INHIBITING CHOLESTERYL ESTER TRANSFER PROTEIN ACTIVITY</p> <p>(57) Abstract</p> <p>The invention relates to substituted aryl and heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanol compounds useful as inhibitors of cholesteroyl ester transfer protein (CETP; plasma lipid transfer protein-I) and compounds, compositions and methods for treating atherosclerosis and other coronary artery diseases. Novel high yield, stereoselective processes for the preparation of the chiral substituted alkanol compounds from chiral and achiral intermediates are described.</p>			

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**(R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
Useful for Inhibiting Cholesteryl Ester Transfer Protein Activity**

**FIELD OF THE INVENTION**

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This invention is in the field of treating cardiovascular disease, and specifically relates to compounds, compositions, methods for treating atherosclerosis and other coronary artery disease, and methods for making compounds of this invention. More particularly, the invention relates to (R)-  
10 chiral halogenated 1-substitutedamino-(n+1)-alkanol compounds that inhibit cholesteryl ester transfer protein (CETP), also known as plasma lipid transfer protein-I.

**BACKGROUND OF THE INVENTION**

15

Numerous studies have demonstrated that a low plasma concentration of high density lipoprotein (HDL) cholesterol is a powerful risk factor for the development of atherosclerosis (Barter and Rye, *Atherosclerosis*, 121, 1-12 (1996)). HDL is one of the major classes of lipoproteins that function in the  
20 transport of lipids through the blood. The major lipids found associated with HDL include cholesterol, cholesteryl ester, triglycerides, phospholipids and fatty acids. The other classes of lipoproteins found in the blood are low density lipoprotein (LDL) and very low density lipoprotein (VLDL). Since low levels of HDL cholesterol increase the risk of atherosclerosis, methods for  
25 elevating plasma HDL cholesterol would be therapeutically beneficial for the treatment of atherosclerosis and other diseases associated with accumulation of lipid in the blood vessels. These diseases include, but are not limited to, coronary heart disease, peripheral vascular disease, and stroke.

Atherosclerosis underlies most coronary artery disease (CAD), a major  
30 cause of morbidity and mortality in modern society. High LDL cholesterol (above 180 mg/dl) and low HDL cholesterol (below 35 mg/dl) have been shown to be important contributors to the development of atherosclerosis. Other diseases, such as peripheral vascular disease, stroke, and hypercholesterolaemia are negatively affected by adverse HDL/LDL ratios.  
35 Inhibition of CETP by the subject compounds is shown to effectively modify plasma HDL/LDL ratios, and to check the progress and/or formation of these diseases.

CETP is a plasma protein that facilitates the movement of cholestryl esters and triglycerides between the various lipoproteins in the blood (Tall, *J. Lipid Res.*, 34, 1255-74 (1993)). The movement of cholestryl ester from HDL to LDL by CETP has the effect of lowering HDL cholesterol. It therefore follows that inhibition of CETP should lead to elevation of plasma HDL cholesterol and lowering of plasma LDL cholesterol, thereby providing a therapeutically beneficial plasma lipid profile (McCarthy, *Medicinal Res. Revs.*, 13, 139-59 (1993); Sitori, *Pharmac. Ther.*, 67,443-47 (1995)). This exact phenomenon was first demonstrated by Swenson et al., (*J. Biol. Chem.*, 264, 14318 (1989)) with the use of a monoclonal antibody that specifically inhibited CETP. In rabbits, the antibody caused an elevation of the plasma HDL cholesterol and a decrease in LDL cholesterol. Son et al. (*Biochim. Biophys. Acta* 795, 743-480 (1984)), Morton et al. (*J. Lipid Res.* 35, 836-847 (1994)) and Tollefson et al. (*Am. J. Physiol.*, 255, (Endocrinol. Metab. 18, E894-E902 (1988))) describe proteins from human plasma that inhibit CETP. U.S. Patent 5,519,001, issued to Kushwaha et al., describes a 36 amino acid peptide derived from baboon apo C-I that inhibits CETP activity. Cho et al. (*Biochim. Biophys. Acta* 1391, 133-144 (1998)) describe a peptide from hog plasma that inhibits human CETP. Bonin et al. (*J. Peptide Res.*, 51, 216-225 (1998)) disclose a decapeptide inhibitor of CETP. A depsipeptide fungal metabolite is disclosed as a CETP inhibitor by Hedge et al. in *Bioorg. Med. Chem. Lett.*, 8, 1277-80 (1998).

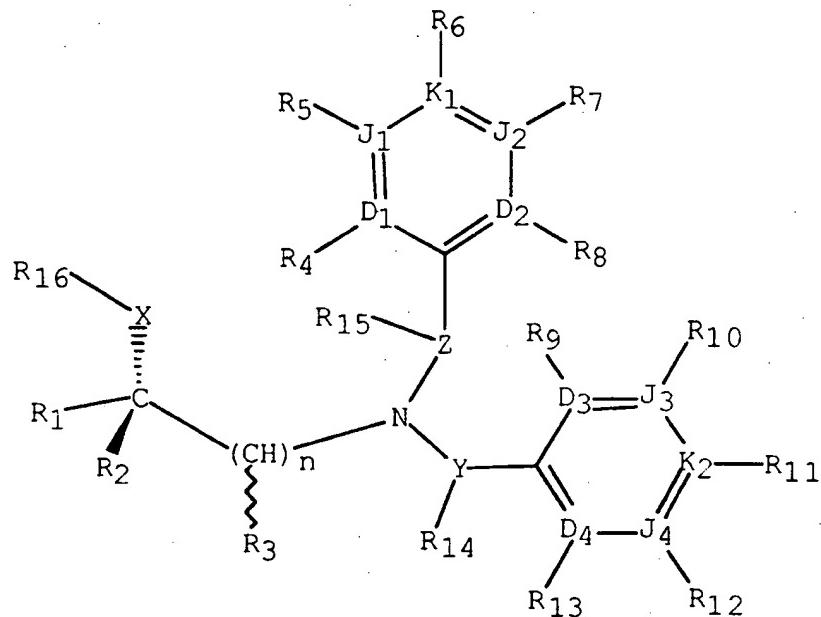
There have been several reports of non-peptidic compounds that act as CETP inhibitors. Barrett et al. (*J. Am. Chem. Soc.*, 118, 7863-63 (1996)) and Kuo et al. (*J. Am. Chem. Soc.*, 117, 10629-34 (1995)) describe cyclopropane-containing CETP inhibitors. Pietzonka et al. (*Bioorg. Med. Chem. Lett.*, 6, 1951-54 (1996)) describe phosphonate-containing analogs of cholestryl ester as CETP inhibitors. Coval et al. (*Bioorg. Med. Chem. Lett.*, 5, 605-610 (1995)) describe Wiedendiol-A and -B, and related sesquiterpene compounds as CETP inhibitors. Japanese Patent Application No. 10287662-A describes polycyclic, non-amine containing, polyhydroxylic natural compounds possessing CETP inhibition properties. Lee et al. (*J. Antibiotics*, 49, 693-96 (1996)) describe CETP inhibitors derived from an insect fungus. Busch et al. (*Lipids*, 25, 216-220, (1990)) describe cholestryl acetyl bromide as a CETP inhibitor. Morton and Zilversmit (*J. Lipid Res.*, 35, 836-47 (1982)) describe that p-chloromercuriphenyl sulfonate, p-hydroxymercuribenzoate and ethyl mercurithiosalicylate inhibit CETP.

Connolly et al. (*Biochem. Biophys. Res. Comm.* 223, 42-47 (1996)) describe other cysteine modification reagents as CETP inhibitors. Xia et al. describe 1,3,5-triazines as CETP inhibitors (*Bioorg. Med. Chem. Lett.*, 6, 919-22 (1996)). Bisgaier et al. (*Lipids*, 29, 811-8 (1994)) describe 4-phenyl-5-tridecyl-4H-1,2,4-triazole-thiol as a CETP inhibitor. Oomura et al. disclose non-peptidic tetracyclic and hexacyclic phenols as CETP inhibitors in Japanese Patent Application No. 10287662.

- Some substituted heteroalkylamine compounds are known. In European Patent Application No. 796846, Schmidt et al. describe 2-aryl-substituted pyridines as cholesteryl ester transfer protein inhibitors useful as cardiovascular agents. One substituent at C3 of the pyridine ring can be an hydroxyalkyl group. In European Patent Application No. 801060, Dow and Wright describe heterocyclic derivatives substituted with an aldehyde addition product of an alkylamine to afford 1-hydroxy-1-amines. These are reported to be  $\beta$ 3-adrenergic receptor agonists useful for treating diabetes and other disorders. In Great Britain Patent Application No. 2305665, Fisher et al. disclose 3-agonist secondary amino alcohol substituted pyridine derivatives useful for treating several disorders including cholesterol levels and atherosclerotic diseases. In European Patent Application No. 818448, Schmidt et al. describe tetrahydroquinoline derivatives as cholesteryl ester transfer protein inhibitors. European Patent Application No. 818197, Schmek et al. describe pyridines with fused heterocycles as cholesteryl ester transfer protein inhibitors. Brandes et al. in German Patent Application No. 19627430 describe bicyclic condensed pyridine derivatives as cholesteryl ester transfer protein inhibitors. In WO Patent Application No. 09839299, Muller-Gliemann et al. describe quinoline derivatives as cholesteryl ester transfer protein inhibitors. U.S. Patent 2,700,686, issued to Dickey and Towne, describes N-(2-haloalkyl-2-hydroxyethyl)amines in which the amine is further substituted with either 1 to 2 aliphatic groups or one aromatic group and one aliphatic group. U.S. Patent 2,700,686 further describes a process to prepare the N-(2-haloalkyl-2-hydroxyethyl)amines by reacting halogenated-1,2-epoxyalkanes with the corresponding aliphatic amines and N-alkylanilines and their use as dye intermediates.

## SUMMARY OF THE INVENTION

The present invention provides chiral compounds that can be used to inhibit cholesteryl ester transfer protein (CETP) activity and that have the  
 5 general structure:



In another aspect, the present invention includes pharmaceutical compositions comprising a pharmaceutically effective amount of the chiral  
 10 compounds of this invention and a pharmaceutically acceptable carrier.

In another aspect, this invention relates to methods of using these chiral inhibitors as therapeutic agents in humans to inhibit cholesteryl ester transfer protein (CETP) activity, thereby decreasing the concentrations of low density lipoprotein (LDL) and raising the level of high density lipoprotein (HDL),  
 15 resulting in a therapeutically beneficial plasma lipid profile. The compounds and methods of this invention can also be used to treat dyslipidemia (hypalphalipoproteinemia), hyperlipoproteinaemia (chylomicronemia and hyperapobetalipoproteinemia), peripheral vascular disease, hypercholesterolaemia, atherosclerosis, coronary artery disease and other  
 20 CETP-mediated disorders. The compounds can also be used in prophylactic treatment of subjects who are at risk of developing such disorders. The compounds can be used to lower the risk of atherosclerosis. The compounds of this invention would be also useful in prevention of cerebral vascular accident (CVA) or stroke. Besides being useful for human treatment, these

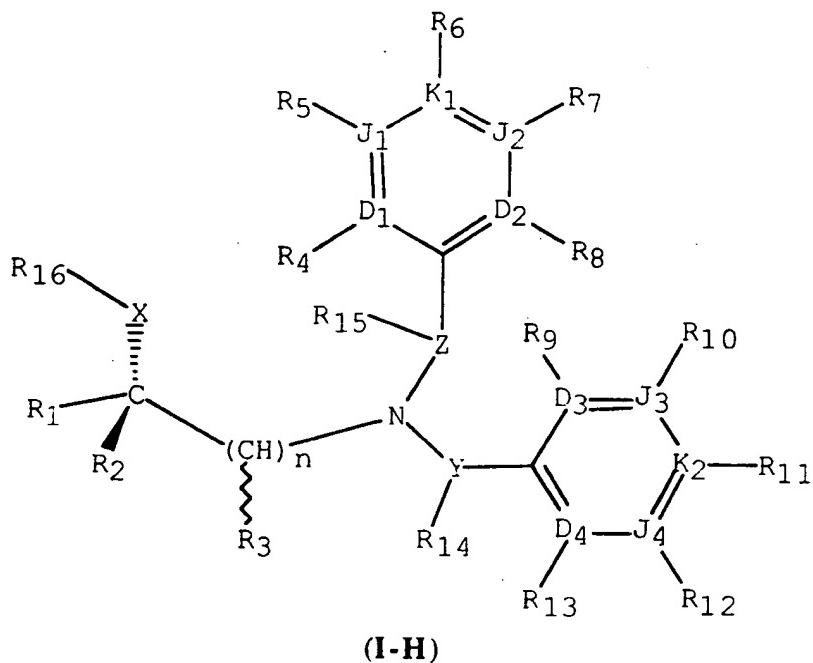
compounds are also useful for veterinary treatment of companion animals, exotic animals and farm animals such as primates, rabbits, pigs, horses, and the like.

## 5

## DESCRIPTION OF THE INVENTION

The present invention relates to a class of compounds comprising (R)-chiral halogenated 1-substitutedamino-(n+1)-alkanols which are beneficial in the therapeutic and prophylactic treatment of coronary artery disease as given in Formula I-H (also referred to herein as generic polycyclic aryl and heteroaryl

10 (R)-chiral halogenated 1-substitutedamino-(n+1)-alkanols):



or a pharmaceutically-acceptable salt thereof, wherein;

15 n is an integer selected from 1 through 4;

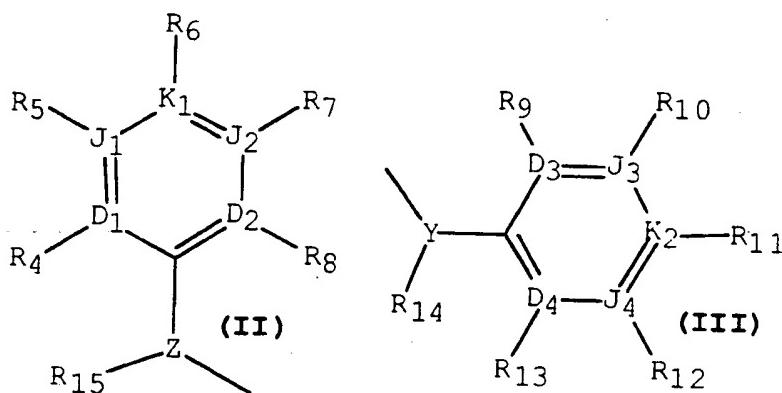
X is oxy;

R<sub>1</sub> is selected from the group consisting of haloalkyl, haloalkenyl,

haloalkoxymethyl, and haloalkenyloxymethyl with the proviso that R<sub>1</sub> has a

higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and

20 (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q wherein A is Formula (II) and Q is Formula (III);



$R_{16}$  is selected from the group consisting of hydrido, alkyl, alkenyl,

- alkynyl, aryl, aralkyl, aryloxyalkyl, alkoxyalkyl, alkenyloxyalkyl,  
alkylthioalkyl, arylthioalkyl, aralkoxyalkyl, heteroaralkoxyalkyl,  
5 alkylsulfinylalkyl, alkylsulfonylalkyl, cycloalkyl, cycloalkylalkyl,  
cycloalkylalkenyl, cycloalkenyl, cycloalkenylalkyl, haloalkyl, haloalkenyl,  
halocycloalkyl, halocycloalkenyl, haloalkoxyalkyl, haloalkenyloxyalkyl,  
halocycloalkoxyalkyl, halocycloalkenyloxyalkyl, perhaloaryl, perhaloaralkyl,  
perhaloaryloxyalkyl, heteroaryl, heterarylalkyl, monocarboalkoxyalkyl,  
10 monocarboalkoxy, dicarboalkoxyalkyl, monocarboxamido, monocyanooalkyl,  
dicyanoalkyl, carboalkoxycyanoalkyl, acyl, aroyl, heteroaroyl,  
heteroaryloxyalkyl, dialkoxyphosphonoalkyl, trialkylsilyl, and a spacer  
selected from the group consisting of a covalent single bond and a linear spacer  
moiety having a chain length of 1 to 4 atoms linked to the point of bonding of  
15 any aromatic substituent selected from the group consisting of R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>.

$R_{13}$ ,  $R_{14}$ , and  $R_{15}$  to form a heterocyclic ring having from 5 through 10 contiguous members;

$D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  can be a covalent bond, no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  can be O, no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  can be S, one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  must be a covalent bond when two

of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are O and S, and no more than four of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be N;

D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no more

- 5 than one can be a covalent bond, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be O, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be S, no more than two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be O and S, one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> must be a covalent bond when two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are O and S, and no more than four of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be N;

- 10 R<sub>2</sub> is hydrido;

R<sub>2</sub> can be selected from the group consisting of hydroxyalkyl, alkyl, alkenyl, alkynyl, aryl, aralkyl, aralkoxyalkyl, aryloxyalkyl, alkoxyalkyl, heteroaryloxyalkyl, alkenyloxyalkyl, cycloalkyl, cycloalkylalkyl, cycloalkylalkenyl, cycloalkenyl, cycloalkenylalkyl, haloalkyl, haloalkenyl,

- 15 halocycloalkyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenylalkyl, heteroaryl, heteroarylalkyl, heteroarylthioalkyl, perhaloaryl, perhaloaralkyl, perhaloaralkyl, heteroaralkylthioalkyl, monocarboalkoxyalkyl, dicarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl,
- 20 alkylsulfinylalkyl, alkylsulfonylalkyl, arylsulfinylalkyl, arylsulfonylalkyl, cycloalkylsulfinylalkyl, cycloalkylsufonylalkyl, heteroarylsulfonylalkyl, heteroarylsulfinylalkyl, aralkylsulfinylalkyl, aralkylsulfonylalkyl, carboxy, carboxyalkyl, carboalkoxy, carboxamide, carboxamidoalkyl, carboaralkoxy, dicyanoalkyl, carboalkoxycyanoalkyl, dialkoxyphosphonoalkyl, and
- 25 diaralkoxyphosphonoalkyl with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-

Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q;

R<sub>3</sub> is selected from the group consisting of hydrido, hydroxy, halo, cyano, aryloxy, hydroxyalkyl, amino, alkylamino, dialkylamino, acyl,

- acylamido, alkoxy, alkyl, alkenyl, alkynyl, aryl, aralkyl, aryloxyalkyl, alkoxyalkyl, aralkoxyalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, aroyl, heteroaroyl, aralkylthioalkyl, heteroaralkylthioalkyl, heteroaryloxyalkyl, alkenyloxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl,
- 5 haloalkenyloxyalkyl, alkylthioalkyl, arylthioalkyl, cycloalkyl, cycloalkylalkyl, cycloalkylalkenyl, cycloalkenyl, cycloalkenylalkyl, heteroaryl, heteroarylalkyl, heteroarylthioalkyl, monocarboalkoxyalkyl, dicarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, arylsulfinylalkyl, arylsulfonylalkyl, cycloalkylsulfinylalkyl, cycloalkylsulfonylalkyl,
- 10 heteroarylsulfonylalkyl, heteroarylsulfinylalkyl, aralkylsulfinylalkyl, aralkylsulfonylalkyl, carboxy, carboxyalkyl, carboalkoxy, carboxamide, carboxamidoalkyl, carboralkoxy, dialkoxyphosphonoalkyl, and diaralkoxyphosphonoalkyl with the provisos that  $(CH_3)_n-N(A)Q$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-
- 15 Ingold-Prelog stereochemical system ranking than  $R_2$ ;
- $Y$  is selected from a group consisting of a covalent single bond,  $(C(R_{14})_2)_q$  wherein  $q$  is an integer selected from 1 through 2 and  $(CH(R_{14}))_g-W-(CH(R_{14}))_p$  wherein  $g$  and  $p$  are integers independently selected from 0 through 1;
- 20  $R_{14}$  is independently selected from the group consisting of hydrido, hydroxy, halo, cyano, aryloxy, amino, alkylamino, dialkylamino, hydroxyalkyl, acyl, aroyl, heteroaroyl, heteroaryloxyalkyl, sulfhydryl, acylamido, alkoxy, alkylthio, arylthio, alkyl, alkenyl, alkynyl, aryl, aralkyl, aryloxyalkyl, aralkoxyalkylalkoxy, alkylsulfinylalkyl, alkylsulfonylalkyl,
- 25 aralkylthioalkyl, heteroaralkoxythioalkyl, alkoxyalkyl, heteroaryloxyalkyl, alkenyloxyalkyl, alkylthioalkyl, arylthioalkyl, cycloalkyl, cycloalkylalkyl, cycloalkylalkenyl, cycloalkenyl, cycloalkenylalkyl, haloalkyl, haloalkenyl, halocycloalkyl, halocycloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy, halocycloalkoxyalkyl,
- 30 halocycloalkenyoxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, heteroaryl, heteroarylalkyl, heteroarylthioalkyl, heteroaralkylthioalkyl, monocarboalkoxyalkyl, dicarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, alkylsulfinyl, alkylsulfonyl, haloalkylsulfinyl,

haloalkylsulfonyl, arylsulfinyl, arylsulfinylalkyl, arylsulfonyl, arylsulfonylalkyl, aralkylsulfinyl, aralkylsulfonyl, cycloalkylsulfinyl, cycloalkylsulfonyl, cycloalkylsulfinylalkyl, cycloalkylsulfonylalkyl, heteroarylsulfonylalkyl, heteroarylsulfinyl, heteroarylsulfonyl,

- 5 heteroarylsulfinylalkyl, aralkylsulfinylalkyl, aralkylsulfonylalkyl, carboxy, carboxyalkyl, carboalkoxy, carboxamide, carboxamidoalkyl, carboaralkoxy, dialkoxyphosphono, diaralkoxyphosphono, dialkoxyphosphonoalkyl, diaralkoxyphosphonoalkyl, a spacer selected from a moiety having a chain length of 3 to 6 atoms connected to the point of bonding selected from the

- 10 group consisting of R<sub>9</sub> and R<sub>13</sub> to form a ring selected from the group consisting of a cycloalkenyl ring having from 5 through 8 contiguous members and a heterocycl ring having from 5 through 8 contiguous members, and a spacer selected from a moiety having a chain length of 2 to 5 atoms connected to the point of bonding selected from the group consisting of R<sub>4</sub> and R<sub>8</sub> to

- 15 form a heterocycl having from 5 through 8 contiguous members with the proviso that, when Y is a covalent bond, an R<sub>14</sub> substituent is not attached to Y;

- R<sub>14</sub> and R<sub>15</sub> can be taken together to form a spacer selected from a moiety having a chain length of 2 to 5 atoms to form a heterocycl ring having 20 from 5 through 8 contiguous members;

- R<sub>14</sub> and R<sub>14</sub>, when bonded to the different atoms, can be taken together to form a group selected from the group consisting of a covalent bond, alkylene, haloalkylene, and a spacer selected from a group consisting of a moiety having a chain length of 2 to 5 atoms connected to form a ring selected 25 from the group of a saturated cycloalkyl having from 5 through 8 contiguous members, a cycloalkenyl having from 5 through 8 contiguous members, and a heterocycl having from 5 through 8 contiguous members;

- R<sub>14</sub> and R<sub>14</sub>, when bonded to the same atom can be taken together to form a group selected from the group consisting of oxo, thiono, alkylene, 30 haloalkylene, and a spacer selected from the group consisting of a moiety having a chain length of 3 to 7 atoms connected to form a ring selected from the group consisting of a cycloalkyl having from 4 through 8 contiguous

members, a cycloalkenyl having from 4 through 8 contiguous members, and a heterocyclyl having from 4 through 8 contiguous members:

W is selected from the group consisting of O, C(O), C(S),

C(O)N(R<sub>14</sub>), C(S)N(R<sub>14</sub>), (R<sub>14</sub>)NC(O), (R<sub>14</sub>)NC(S), S, S(O), S(O)<sub>2</sub>,

5 S(O)<sub>2</sub>N(R<sub>14</sub>), (R<sub>14</sub>)NS(O)<sub>2</sub>, and N(R<sub>14</sub>) with the proviso that R<sub>14</sub> is selected from other than halo and cyano;

Z is independently selected from a group consisting of a covalent single bond, (C(R<sub>15</sub>)<sub>2</sub>)<sub>q</sub> wherein q is an integer selected from 1 through 2,

(CH(R<sub>15</sub>))<sub>j</sub>-W-(CH(R<sub>15</sub>))<sub>k</sub> wherein j and k are integers independently

10 selected from 0 through 1 with the proviso that, when Z is a covalent single bond, an R<sub>15</sub> substituent is not attached to Z;

R<sub>15</sub> is independently selected, when Z is (C(R<sub>15</sub>)<sub>2</sub>)<sub>q</sub> wherein q is an integer selected from 1 through 2, from the group consisting of hydrido, hydroxy, halo, cyano, aryloxy, amino, alkylamino, dialkylamino,

15 hydroxyalkyl, acyl, aroyl, heteroaroyl, heteroaryloxyalkyl, sulfhydryl, acylamido, alkoxy, alkylthio, arylthio, alkyl, alkenyl, alkynyl, aryl, aralkyl, aryloxyalkyl, aralkoxyalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, aralkylthioalkyl, heteroaralkylthioalkyl, alkoxyalkyl, heteroaryloxyalkyl, alkenyloxyalkyl, alkylthioalkyl, arylthioalkyl, cycloalkyl, cycloalkylalkyl,

20 cycloalkylalkenyl, cycloalkenyl, cycloalkenylalkyl, haloalkyl, haloalkenyl, halocycloalkyl, halocycloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenylalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, heteroaryl, heteroarylalkyl, heteroarylthioalkyl, heteroaralkylthioalkyl,

25 monocarboalkoxyalkyl, dicarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, alkylsulfinyl, alkylsulfonyl, haloalkylsulfinyl, haloalkylsulfonyl, arylsulfinyl, arylsulfinylalkyl, arylsulfonyl, arylsulfonylalkyl, aralkylsulfinyl, aralkylsulfonyl, cycloalkylsulfinyl, cycloalkylsulfonyl, cycloalkylsulfinylalkyl, cycloalkylsulfonylalkyl, heteroarylsulfonylalkyl, heteroarylsulfinyl, heteroarylsulfonyl,

30 heteroarylsulfinylalkyl, aralkylsulfinylalkyl, aralkylsulfonylalkyl, carboxy, carboxyalkyl, carboalkoxy, carboxamide, carboxamidoalkyl, carboaralkoxy, dialkoxyphosphono, diaralkoxyphosphono, dialkoxyphosphonoalkyl,

diaralkoxyphosphonoalkyl, a spacer selected from a moiety having a chain length of 3 to 6 atoms connected to the point of bonding selected from the group consisting of R<sub>4</sub> and R<sub>8</sub> to form a ring selected from the group consisting of a cycloalkenyl ring having from 5 through 8 contiguous members and a heterocyclyl ring having from 5 through 8 contiguous members, and a spacer selected from a moiety having a chain length of 2 to 5 atoms connected to the point of bonding selected from the group consisting of R<sub>9</sub> and R<sub>13</sub> to form a heterocyclyl having from 5 through 8 contiguous members:

R<sub>15</sub> and R<sub>15</sub>, when bonded to the different atoms, can be taken

10 together to form a group selected from the group consisting of a covalent bond, alkylene, haloalkylene, and a spacer selected from a group consisting of a moiety having a chain length of 2 to 5 atoms connected to form a ring selected from the group of a saturated cycloalkyl having from 5 through 8 contiguous members, a cycloalkenyl having from 5 through 8 contiguous members, and a heterocyclyl having from 5 through 8 contiguous members;

15 R<sub>15</sub> and R<sub>15</sub>, when bonded to the same atom, can be taken together to form a group selected from the group consisting of oxo, thiono, alkylene, haloalkylene, and a spacer selected from the group consisting of a moiety having a chain length of 3 to 7 atoms connected to form a ring selected from the group consisting of a cycloalkyl having from 4 through 8 contiguous members, a cycloalkenyl having from 4 through 8 contiguous members, and a heterocyclyl having from 4 through 8 contiguous members;

R<sub>15</sub> is independently selected, when Z is (CH(R<sub>15</sub>))<sub>j</sub>-W-(CH(R<sub>15</sub>))<sub>k</sub>

20 wherein j and k are integers independently selected from 0 through 1, from the group consisting of hydrido, halo, cyano, aryloxy, carboxyl, acyl, aroyl, heteroaroyl, hydroxyalkyl, heteroaryloxyalkyl, acylamido, alkoxy, alkylthio, arylthio, alkyl, alkenyl, alkynyl, aryl, aralkyl, aryloxyalkyl, alkoxyalkyl, heteroaryloxyalkyl, aralkoxyalkyl, heteroaralkoxyalkyl, alkylsulfonylalkyl, alkylsulfinylalkyl, alkenyloxyalkyl, alkylthioalkyl, arylthioalkyl, cycloalkyl, cycloalkylalkyl, cycloalkylalkenyl, cycloalkenyl, cycloalkenylalkyl, haloalkyl, haloalkenyl, halocycloalkyl, halocycloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenyloxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl,

heteroaryl, heteroaralkyl, heteroarylthioalkyl, heteroaralkylthioalkyl, monocarboalkoxyalkyl, dicarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, alkylsulfinyl, alkylsulfonyl, haloalkylsulfinyl, haloalkylsulfonyl, arylsulfinyl, arylsulfinylalkyl, arylsulfonyl,

- 5      arylsulfonylalkyl, aralkylsulfinyl, aralkylsulfonyl, cycloalkylsulfinyl, cycloalkylsulfonyl, cycloalkylsulfinylalkyl, cycloalkylsulfonylalkyl, heteroarylalkyl, heteroarylalkyl, heteroarylalkyl, heteroarylalkyl, heteroarylalkyl, aralkylsulfinylalkyl, aralkylsulfonylalkyl, carboxyalkyl, carboalkoxy, carboxamide, carboxamidoalkyl, carboalkoxy,
- 10     dialkoxyphosphonoalkyl, diaralkoxyphosphonoalkyl, a spacer selected from a linear moiety having a chain length of 3 to 6 atoms connected to the point of bonding selected from the group consisting of R<sub>4</sub> and R<sub>8</sub> to form a ring selected from the group consisting of a cycloalkenyl ring having from 5 through 8 contiguous members and a heterocycl ring having from 5 through
- 15     8 contiguous members, and a spacer selected from a linear moiety having a chain length of 2 to 5 atoms connected to the point of bonding selected from the group consisting of R<sub>9</sub> and R<sub>13</sub> to form a heterocycl ring having from 5 through 8 contiguous members;

R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, and R<sub>13</sub> are independently

- 20     selected from the group consisting of hydrido, carboxy, heteroaralkylthio, heteroaralkoxy, cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclxy, aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocycl, perhaloaralkyl, aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl, halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl,
- 25     cycloalkylsulfinylalkyl, cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroarylamino, N-heteroarylamino-N-alkylamino, heteroaralkyl, heteroarylaminoalkyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxyalkyl, heteroaralkoxy, cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy, cycloalkenyloxyalkyl,
- 30     cycloalkylenedioxy, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenyloxy, halocycloalkenyloxyalkyl, hydroxy, amino, thio, nitro, lower alkylamino, alkylthio, alkylthioalkyl, arylamino, aralkylamino, arylthio, arylthioalkyl, heteroaralkoxyalkyl, alkylsulfinyl, alkylsulfinylalkyl, arylsulfinylalkyl, arylsulfonylalkyl, heteroarylalkyl, heteroarylalkyl, heteroarylalkyl,
- 35     heteroarylalkyl, alkylsulfonyl, alkylsulfonylalkyl,

haloalkylsulfinylalkyl, haloalkylsulfonylalkyl, alkylsulfonamido, alkylaminosulfonyl, amidosulfonyl, monoalkyl amidosulfonyl, dialkyl amidosulfonyl, monoarylamidosulfonyl, arylsulfonamido, diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl, arylsulfinyl.

- 5      arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl, heterocyclsulfonyl, heterocyclthio, alkanoyl, alkenoyl, aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl, alkyl, alkenyl, alkynyl, alkenyloxy, alkenyloxyalky, alkylenedioxy, haloalkylenedioxy, cycloalkyl, cycloalkylalkanoyl, cycloalkenyl, lower cycloalkylalkyl, lower cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy, hydroxyhaloalkyl, hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl, haloalkoxyalkyl, aryl, heteroaralkynyl, aryloxy, aralkoxy, aryloxyalkyl, saturated heterocycl, partially saturated heterocycl, heteroaryl, heteroaryloxy, heteroaryloxyalkyl, arylalkenyl, heteroarylalkenyl, carboxyalkyl, carboalkoxy,
- 10     15    alkoxycarboxamido, alkylamidocarbonylamido, arylamidocarbonylamido, carboalkoxyalkyl, carboalkoxyalkenyl, carboaralkoxy, carboxamido, carboxamidoalkyl, cyano, carbohaloalkoxy, phosphono, phosphonoalkyl, diaralkoxyphosphono, and diaralkoxyphosphonoalkyl with the proviso that there are one to five non-hydrido ring substituents R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, and R<sub>8</sub>
- 20     25    present, that there are one to five non-hydrido ring substituents R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, and R<sub>13</sub> present, and R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, and R<sub>13</sub> are each independently selected to maintain the tetravalent nature of carbon, trivalent nature of nitrogen, the divalent nature of sulfur, and the divalent nature of oxygen;

- 25     30    R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, R<sub>7</sub> and R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> can be independently selected to form spacer pairs wherein a spacer pair is taken together to form a linear moiety having from 3 through 6 contiguous atoms connecting the points of bonding of said spacer pair members to form a ring selected from the group consisting of a cycloalkenyl ring having 5 through 8 contiguous members, a partially saturated heterocycl ring having 5 through 8 contiguous members, a heteroaryl ring having 5 through 6 contiguous members, and an aryl with the provisos that no

more than one of the group consisting of spacer pairs R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub>, can be used at the same time and that no more than one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> can be used at the same time;

5        R<sub>4</sub> and R<sub>9</sub>, R<sub>4</sub> and R<sub>13</sub>, R<sub>8</sub> and R<sub>9</sub>, and R<sub>8</sub> and R<sub>13</sub> can be independently selected to form a spacer pair wherein said spacer pair is taken together to form a linear moiety wherein said linear moiety forms a ring selected from the group consisting of a partially saturated heterocyclyl ring having from 5 through 8 contiguous members and a heteroaryl ring having from 5 through 6 contiguous members with the proviso that no more than one of the group consisting of spacer pairs R<sub>4</sub> and R<sub>9</sub>, R<sub>4</sub> and R<sub>13</sub>, R<sub>8</sub> and R<sub>9</sub>, and R<sub>8</sub> and R<sub>13</sub> can be used at the same time;

10      R<sub>5</sub> and R<sub>10</sub>, R<sub>5</sub> and R<sub>12</sub>, R<sub>7</sub> and R<sub>10</sub>, and R<sub>7</sub> and R<sub>12</sub> can be independently selected to form a spacer pair wherein said spacer pair is taken together to form a linear moiety wherein said linear moiety forms a C<sub>8</sub> to C<sub>13</sub> heterocyclyl ring having from 8 through 13 contiguous members with the proviso that no more than one of the group consisting of spacer pairs R<sub>5</sub> and R<sub>10</sub>, R<sub>5</sub> and R<sub>12</sub>, R<sub>7</sub> and R<sub>10</sub>, and R<sub>7</sub> and R<sub>12</sub> can be used at the same time.

15      In another embodiment of compounds of Formula I-H,  
D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are each carbon with the proviso that at least one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is selected from the group consisting of O, S, and N, wherein D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no  
20     more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be a covalent bond, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be O, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub>

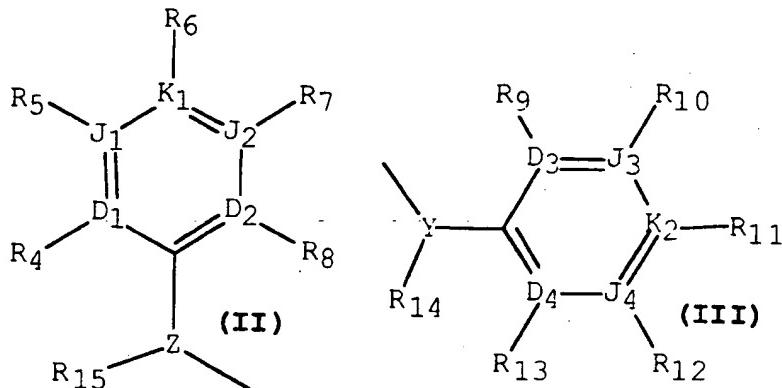
and K<sub>2</sub> can be S, one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> must be a covalent bond when two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are O and S, and no more than four of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be N;

D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be selected from the group consisting of C,

- 5      O, S, N and covalent bond with the provisos that D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are each carbon and at least one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is selected from the group consisting of O, S, and N wherein, when D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are selected from the group consisting of C, O, S, covalent bond, and N, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be a covalent bond, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be O, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be S, one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> must be a covalent bond when two of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are O and S, and no more than four of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be N;
- 10     n is an integer selected from 1 through 4;
- 15     X is oxy;

R<sub>16</sub> is selected from the group consisting of hydrido, acyl, aroyl, and trialkylsilyl;

- 20     R<sub>1</sub> is selected from the group consisting of haloalkyl, haloalkenyl, haloalkoxymethyl, and haloalkenyloxymethyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and (CH<sub>2</sub>R<sub>3</sub>)<sub>n</sub>-N(A)Q wherein A is Formula (II) and Q is Formula (III);



$R_2$  is hydrido;

$R_2$  can be selected from the group consisting of aryl, aralkyl, alkyl,

- 5 alkenyl, alkenyloxyalkyl, haloalkyl, haloalkenyl, halocycloalkyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy, halocycloalkoxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, heteroaryl, dicyanoalkyl, and carboalkoxycyanoalkyl with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-

Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(A)Q$ ;

- 10 R<sub>3</sub> is selected from the group consisting of hydrido, hydroxy, cyano, aryl, aralkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, heteroaryl, alkenyloxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocyanooalkyl, dicyanooalkyl, carboxamide, and carboxamidoalkyl with the provisos that (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q has a lower Cahn-

15 Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-

Ingold-Prelog stereochemical system ranking than R<sub>2</sub>;

$\text{Y}$  is selected from the group consisting of covalent single bond and

$(C(R_{14})_2)_q$  wherein q is an integer selected from 1 through 2;

$R_{14}$  is selected from the group consisting of hydrido, cyano,

- 20 hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocyanoalkyl, dicyanoalkyl, carboxamide, and carboxamidoalkyl;

Z is selected from the group consisting of covalent single bond.

$(C(R_{15})_2)_q$  wherein q is an integer selected from 1 through 2, and

$(CH(R_{15}))_j-W-(CH(R_{15}))_k$  wherein j and k are integers independently selected from 0 through 1;

5 W is oxy;

$R_{15}$  is selected from the group consisting of hydrido, cyano, hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocynoalkyl, dicyanoalkyl, carboxamide, and carboxamidoalkyl;

10  $R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido, halo, haloalkyl, and alkyl :

15  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, carboxy, heteroaralkylthio, heteroarylsulfonyl, heteroaralkoxy, cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclyloxy, aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocyclyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, cycloalkoxy, cycloalkylalkoxy, hydroxy, amino, thio, nitro, lower alkylamino, alkylthio, arylamino, aralkylamino, arylthio, arylthioalkyl, alkylsulfonyl, alkylsulfonamido, monoarylaminosulfonyl, arylsulfonyl, heteroarylthio, heterocyclsulfonyl, heterocyclylthio, alkanoyl, alkenoyl, aroyl, alkyl, alkenyl, alkynyl, alkenyloxy, alkylenedioxy, haloalkylenedioxy, cycloalkyl, cycloalkylalkanoyl, halo, haloalkyl, haloalkoxy, hydroxyhaloalkyl, hydroxyalkyl, aryl, aryloxy, aralkoxy, saturated heterocyclyl, heteroaryl, heteroaryloxy, heteroaryloxyalkyl, heteroaralkyl, carboalkoxy, 20 alkoxycarboxamido, alkylamidocarbonylamido, arylamidocarbonylamido, carboalkoxyalkyl, carboalkoxyalkenyl, carboxamido, carboxamidoalkyl, and cyano;

25  $R_4$  and  $R_5$ ,  $R_5$  and  $R_6$ ,  $R_6$  and  $R_7$ ,  $R_7$  and  $R_8$ ,  $R_9$  and  $R_{10}$ ,  $R_{10}$  and  $R_{11}$ ,  $R_{11}$  and  $R_{12}$ , and  $R_{12}$  and  $R_{13}$  spacer pairs can be independently selected from the group consisting of alkylene, alkenylene, alkylenedioxy, aralkylene, diacyl, haloalkylene, and aryloxylene with the provisos that no

more than one of the group consisting of spacer pairs R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>,

R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub> can be used at the same time and that no more than one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> can be used at the same time.

5

In an even more specific embodiment of compounds Formula I-H,

D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are each carbon;

D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that at least one

10 of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is selected from the group consisting of O, S, and N, wherein no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be a covalent

bond, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be O, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be S, one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> must be a covalent bond when two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are O and S, and no more

15 than four of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> can be N;

n is an integer selected from 1 to 3;

X is oxy;

R<sub>1</sub> is selected from the group consisting of trifluoromethyl,

1.1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, chloromethyl,  
20 fluoromethyl, difluoromethyl, chlorodifluoromethyl, pentafluoroethyl,  
2,2,3,3,3-pentafluoropropyl, and heptafluoropropyl;

R<sub>16</sub> is selected from the group consisting of acetyl, benzoyl, dimethyl  
*tert*-butylsilyl, hydrido, and trimethylsilyl;

R<sub>2</sub> is hydrido;

25 R<sub>2</sub> can be selected from the group consisting of hydrido, methyl, ethyl,  
propyl, butyl, isopropyl, isobutyl, vinyl, phenyl,

4-trifluoromethylphenyl, 1,1,2,2-tetrafluoroethoxymethyl, chloromethyl, trifluoromethoxymethyl, fluoromethyl, difluoromethyl, 2,2,3,3,3-pentafluoropropyl, and pentafluorophenoxy methyl with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-

5 N(A)Q:

R<sub>3</sub> is selected from the group consisting of hydrido, hydroxy, cyano, acetyl, methoxy, ethoxy, methyl, ethyl, propyl, vinyl, phenyl, methoxymethyl, 4-trifluoromethylphenyl, trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, chloromethyl, fluoromethyl, difluoromethyl, 10 chlorodifluoromethyl, pentafluoroethyl, 2,2,3,3,3-pentafluoropropyl, heptafluoropropyl, pentafluorophenyl, and pentafluorophenoxy methyl with the provisos that (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q has a lower Cahn-Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-Ingold-Prelog stereochemical system ranking than R<sub>2</sub>.

15

In another even more specific embodiment of compounds Formula I-H,

D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are each carbon;

D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that at least one

20 of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is selected from the group consisting of O, S, and

N, wherein no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be a covalent

bond, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be O, no more than one

of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be S, one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> must be a

covalent bond when two of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are O and S, and no more

25 than four of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> can be N;

n is an integer selected from 1 to 3;

X is oxy;

R<sub>1</sub> is selected from the group consisting of trifluoromethyl,

1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, chloromethyl, fluoromethyl, difluoromethyl, chlorodifluoromethyl, pentafluoroethyl, 2,2,3,3,3-pentafluoropropyl, and heptafluoropropyl;

5 R<sub>16</sub> is selected from the group consisting of acetyl, benzoyl, dimethyl *tert*-butylsilyl, hydrido, and trimethylsilyl;

R<sub>2</sub> is hydrido;

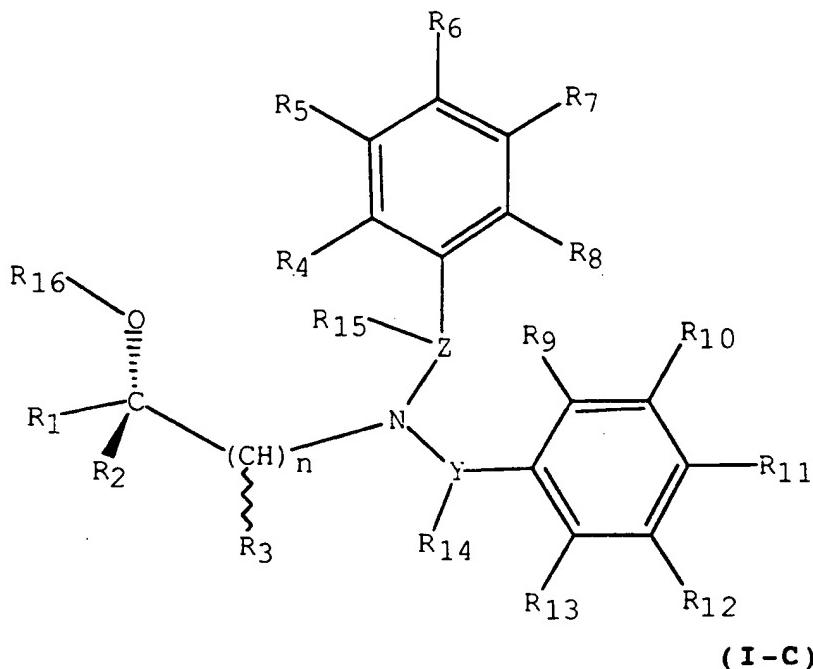
R<sub>2</sub> can be selected from the group consisting of hydrido, methyl, ethyl, propyl, butyl, isopropyl, isobutyl, vinyl, phenyl,

10 4-trifluoromethylphenyl, 1,1,2,2-tetrafluoroethoxymethyl, chloromethyl, trifluoromethoxymethyl, fluoromethyl, difluoromethyl, 2,2,3,3,3-pentafluoropropyl, and pentafluorophenoxyethyl with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q;

15 R<sub>3</sub> is selected from the group consisting of hydrido, hydroxy, cyano, acetyl, methoxy, ethoxy, methyl, ethyl, propyl, vinyl, phenyl, methoxymethyl, 4-trifluoromethylphenyl, trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, chloromethyl, fluoromethyl, difluoromethyl, chlorodifluoromethyl, pentafluoroethyl, 2,2,3,3,3-pentafluoropropyl,

20 heptafluoropropyl, pentafluorophenyl, and pentafluorophenoxyethyl with the provisos that (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q has a lower Cahn-Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-Ingold-Prelog stereochemical system ranking than R<sub>2</sub>.

25 In a preferred embodiment of compounds of Formula I-H, the compounds correspond to the Formula I-C (also referred to herein as phenyl (R)-chiral halogenated 1-substitutedamino-(n+1)-alkanols):



or a pharmaceutically acceptable salt thereof, wherein:

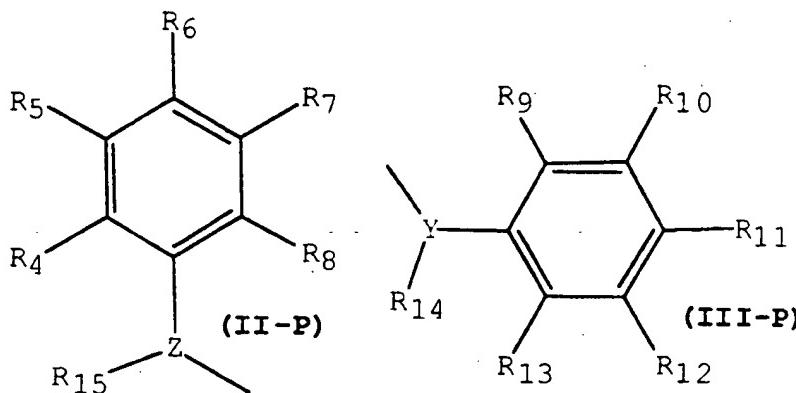
n is an integer selected from 1 through 4;

5        R<sub>16</sub> is selected from the group consisting of hydrido, alkyl, acyl, aroyl, heteroaroyl, trialkylsilyl, and a spacer selected from the group consisting of a covalent single bond and a linear spacer moiety having a chain length of 1 to 4 atoms linked to the point of bonding of any aromatic substituent selected from the group consisting of R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> to form a heterocyclic ring having from 5 through 10 contiguous members with the proviso that said linear spacer moiety is other than covalent single bond when R<sub>2</sub> is alkyl;

10      having from 5 through 10 contiguous members with the proviso that said linear spacer moiety is other than covalent single bond when R<sub>2</sub> is alkyl;

R<sub>1</sub> is selected from the group consisting of haloalkyl, haloalkenyl, haloalkoxymethyl, and haloalkenyloxymethyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and

15      (CH<sub>3</sub>)<sub>n</sub>-N(Ap)Qp wherein Ap is Formula (II-P) and Qp is Formula (III-P);



R<sub>2</sub> is hydrido;

$R_2$  can be selected from the group consisting of aryl, aralkyl, alkyl,

- 5 alkenyl, alkenyloxyalkyl, haloalkyl, haloalkenyl, halocycloalkyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy, halocycloalkoxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, heteroaryl, dicyanoalkyl, and carboalkoxycyanoalkyl with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-

Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(Ap)Qp;

$R_3$  is selected from the group consisting of hydrido, hydroxy, cyano,

- 10 aryl, aralkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, heteroaryl, alkenyloxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocyanoalkyl, dicyanoalkyl, carboxamide, and carboxamidoalkyl with the provisos that  $(CHR_3)_n-N(Ap)Qp$  has a lower Cahn-  
Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-  
15 Ingold-Prelog stereochemical system ranking than R<sub>2</sub>.

$(C(R_{14}))_q$ , wherein q is an integer selected from 1 through 2;

**R<sub>0</sub>** is selected from the range 0.5 to 1.5, as shown.

IV. Preparation of hydrido, hydroxy, cyanohydrin, and alkylidene derivatives.

- 20 haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, carboalkoxy, carboxamide, carboxamidoalkyl:

Z is selected from the group consisting of covalent single bond.

$(C(R_{15})_2)_q$  wherein q is an integer selected from 1 through 2, and

$(CH(R_{15}))_j \cdot W \cdot (CH(R_{15}))_k$  wherein j and k are integers independently selected from 0 through 1;

5 W is selected from the group consisting of O, C(O), C(S).

$C(O)N(R_{14})$ ,  $C(S)N(R_{14})$ ,  $(R_{14})NC(O)$ ,  $(R_{14})NC(S)$ , S,  $S(O)$ ,  $S(O)_2$ ,

$S(O)_2N(R_{14})$ ,  $(R_{14})NS(O)_2$ , and  $N(R_{14})$  with the proviso that  $R_{14}$  is other than cyano:

$R_{15}$  is selected from the group consisting of hydrido, cyano,

10 hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkynyl, alkoxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, carboalkoxy, carboxamide, and carboxamidoalkyl;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group

15 consisting of hydrido, halo, haloalkyl, and alkyl;

$R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, carboxy, heteroaralkylthio, heteroaralkoxy, cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclcloxy, aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocyclcyl, perhaloaralkyl,

20 aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl, halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl, cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroarylarnino, N-heteroarylarnino-N-alkylarnino, heteroarylarninoalkyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy,

25 cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy, cycloalkenyloxyalkyl, cycloalkylenedioxy, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenyoxy, halocycloalkenyoxyalkyl, hydroxy, amino, thio, nitro, lower alkylarnino, alkylthio, alkylthioalkyl, arylarnino, aralkylarnino, arylthio, arylthioalkyl, heteroaralkoxyalkyl,

30 alkylsulfinyl, alkylsulfinylalkyl, arylsulfinylalkyl, arylsulfonylalkyl, heteroarylsulfinylalkyl, heteroarylsulfonylalkyl, alkylsulfonyl, alkylsulfonylalkyl, haloalkylsulfinylalkyl, haloalkylsulfonylalkyl, haloalkylsulfonylalkyl,

- alkylsulfonamido, alkylaminosulfonyl, amidosulfonyl, monoalkyl  
 amidosulfonyl, dialkyl amidosulfonyl, monoarylamidosulfonyl,  
 arylsulfonamido, diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl,  
 arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl,  
 5 heteroarylsulfonyl, heterocyclsulfonyl, heterocyclthio, alkanoyl, alkenoyl,  
 aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl, alkyl, alkenyl,  
 alkynyl, alkenyloxy, alkenyloxyalky, alkylenedioxy, haloalkylenedioxy,  
 cycloalkyl, cycloalkylalkanoyl, cycloalkenyl, lower cycloalkylalkyl, lower  
 cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy, hydroxyhaloalkyl,  
 10 hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl, haloalkoxyalkyl, aryl,  
 heteroaralkynyl, aryloxy, aralkoxy, aryloxyalkyl, saturated heterocycl,  
 partially saturated heterocycl, heteroaryl, heteroaryloxy, heteroaryloxyalkyl,  
 heteroaralkyl, arylalkenyl, heteroarylalkenyl, carboxyalkyl, carboalkoxy,  
 15 alkoxycarboxamido, alkylamidocarbonylamido, arylamidocarbonylamido,  
 carboalkoxyalkyl, carboalkoxyalkenyl, carboaralkoxy, carboxamido,  
 carboxamidoalkyl, cyano, carbohaloalkoxy, phosphono, phosphonoalkyl,  
 diaralkoxyphosphono, and diaralkoxyphosphonoalkyl;

- R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, R<sub>7</sub> and R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and  
 R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> can be independently selected to form  
 . 20 spacer pairs wherein a spacer pair is taken together to form a linear moiety  
 having from 3 through 6 contiguous atoms connecting the points of bonding of  
 said spacer pair members to form a ring selected from the group consisting of a  
 cycloalkenyl ring having 5 through 8 contiguous members, a partially saturated  
 heterocycl ring having 5 through 8 contiguous members, a heteroaryl ring  
 25 having 5 through 6 contiguous members, and an aryl with the provisos that no  
 more than one of the group consisting of spacer pairs R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>,  
 R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub>, can be used at the same time and that no more than  
 one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub>  
 and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> can be used at the same time.  
 30 In a preferred embodiment of compounds of Formula I-C,  
 n is an integer selected from 1 through 4;

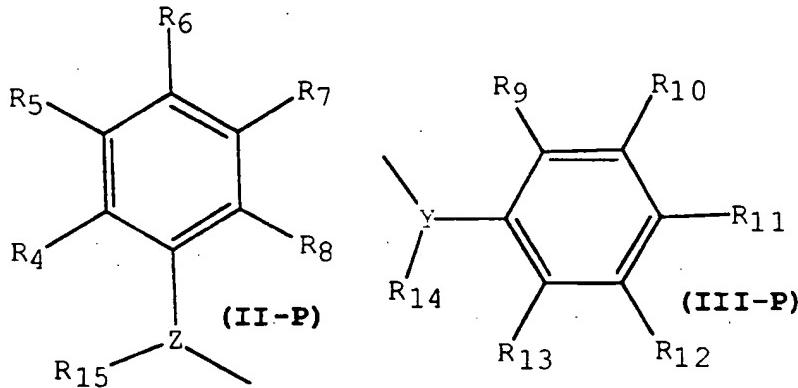
$R_{16}$  is selected from the group consisting of hydrido, acyl, aroyl, and trialkylsilyl;

$R_1$  is selected from the group consisting of haloalkyl, haloalkenyl,

haloalkoxymethyl, and haloalkenyloxymethyl with the proviso that  $R_1$  has a

5 higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and

$(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P):



$R_2$  is hydrido;

$R_2$  can be selected from the group consisting of aryl, aralkyl, alkyl,

10 alkenyl, alkenyloxyalkyl, haloalkyl, haloalkenyl, halocycloalkyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy, halocycloalkoxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, heteroaryl, dicyanoalkyl, and carboalkoxycyanoalkyl with the proviso that  $R_2$  has a lower Cahn-Ingold-

Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ ;

15  $R_3$  is selected from the group consisting of hydrido, hydroxy, cyano,

aryl, aralkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, heteroaryl,

alkenyloxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl,

haloalkenyloxyalkyl, monocyanoalkyl, dicyanoalkyl, carboxamide, and

carboxamidoalkyl with the provisos that  $(CHR_3)_n-N(Ap)Qp$  has a lower Cahn-

Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-

Ingold-Prelog stereochemical system ranking than R<sub>2</sub>:

Y is selected from the group consisting of covalent single bond and

(C(R<sub>14</sub>)<sub>2</sub>)<sub>q</sub> wherein q is an integer selected from 1 through 2;

- 5        R<sub>14</sub> is selected from the group consisting of hydrido, cyano, hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocyanoalkyl, dicyanoalkyl, carboxamide, and carboxamidoalkyl;

          Z is selected from the group consisting of covalent single bond,

- 10      (C(R<sub>15</sub>)<sub>2</sub>)<sub>q</sub> wherein q is an integer selected from 1 through 2, and

(CH(R<sub>15</sub>))<sub>j</sub>-W-(CH(R<sub>15</sub>))<sub>k</sub> wherein j and k are integers independently selected from 0 through 1;

          W is oxy;

          R<sub>15</sub> is selected from the group consisting of hydrido, cyano,

- 15      hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocyanoalkyl, dicyanoalkyl, carboxamide, and carboxamidoalkyl;

          R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group consisting of hydrido, halo, haloalkyl, and alkyl ;

- 20      R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>10</sub>, R<sub>11</sub>, and R<sub>12</sub> are independently selected from the group consisting of hydrido, carboxy, heteroaralkylthio, heteroarylsulfonyl, heteroaralkoxy, cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclyloxy, aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocyclyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, cycloalkoxy.

- 25      cycloalkylalkoxy, hydroxy, amino, thio, nitro, lower alkylamino, alkylthio, arylamino, aralkylamino, arylthio, arylthioalkyl, alkylsulfonyl, alkylsulfonamido, monoarylaminodosulfonyl, arylsulfonyl, heteroarylthio, heterocyclsulfonyl, heterocyclylthio, alkanoyl, alkenoyl, aroyl, alkyl, alkenyl, alkynyl, alkenyloxy, alkylenedioxy, haloalkylenedioxy, cycloalkyl,

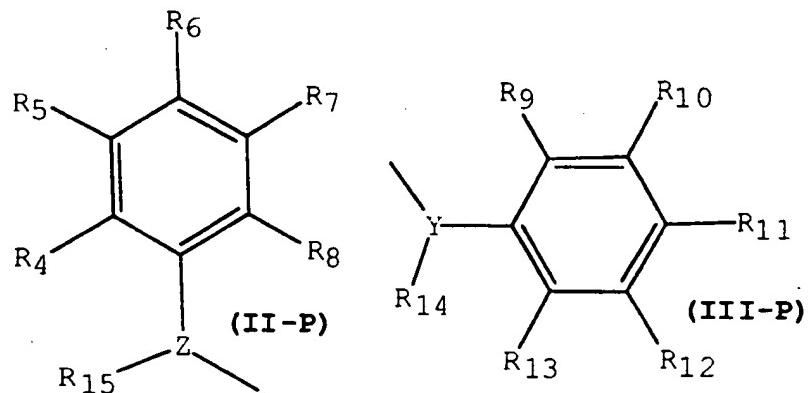
- 30      cycloalkylalkanoyl, halo, haloalkyl, haloalkoxy, hydroxyhaloalkyl, hydroxyalkyl, aryl, aralkyl, aryloxy, aralkoxy, saturated heterocyclyl,

heteroaryl, heteroaryloxy, heteroaryloxyalkyl, arylalkyl, heteroarylalkyl, arylalkenyl, carboalkoxy, alkoxy carboxamido, alkylamido carbonylamido, arylamido carbonylamido, carboalkoxyalkyl, carboalkoxyalkenyl, carboxamido, carboxamidoalkyl, and cyano;

- 5       $R_4$  and  $R_5$ ,  $R_5$  and  $R_6$ ,  $R_6$  and  $R_7$ ,  $R_7$  and  $R_8$ ,  $R_9$  and  $R_{10}$ ,  $R_{10}$  and  $R_{11}$ ,  $R_{11}$  and  $R_{12}$ , and  $R_{12}$  and  $R_{13}$  spacer pairs can be independently selected from the group consisting of alkylene, alkenylene, alkylenedioxy, aralkylene, diacyl, haloalkylene, and aryloxylene with the provisos that no more than one of the group consisting of spacer pairs  $R_4$  and  $R_5$ ,  $R_5$  and  $R_6$ ,
- 10      $R_6$  and  $R_7$ , and  $R_7$  and  $R_8$  can be used at the same time and that no more than one of the group consisting of spacer pairs  $R_9$  and  $R_{10}$ ,  $R_{10}$  and  $R_{11}$ ,  $R_{11}$  and  $R_{12}$ , and  $R_{12}$  and  $R_{13}$  can be used at the same time.

In a more preferred embodiment of compounds of Formula I-C,  $n$  is an integer selected from 1 through 2;

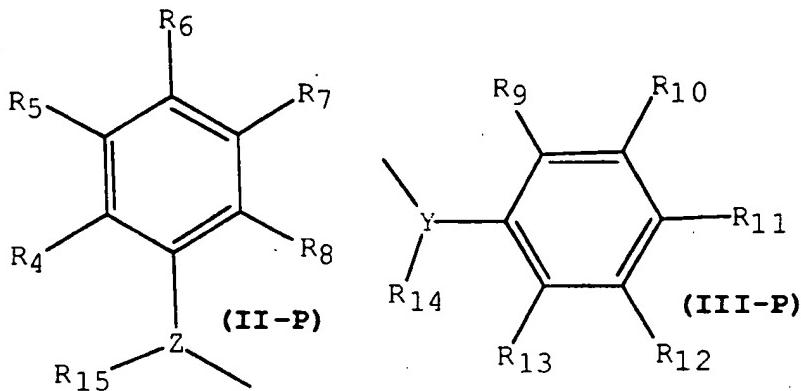
- 15      $R_1$  is selected from the group consisting of haloalkyl and haloalkoxymethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P);



- 20      $R_{16}$  is hydrido;

- R<sub>2</sub> is selected from the group consisting of hydrido, aryl, alkyl, alkenyl, haloalkyl, haloalkoxy, haloalkoxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, and heteroaryl with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(Ap)Qp;
- 5       R<sub>3</sub> is selected from the group consisting of hydrido, aryl, alkyl, alkenyl, haloalkyl, and haloalkoxyalkyl with the provisos that (CHR<sub>3</sub>)<sub>n</sub>-N(Ap)Qp has a lower Cahn-Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-Ingold-Prelog stereochemical system ranking than R<sub>2</sub>;
- Y is selected from the group consisting of a covalent single bond and alkylene;
- 10      Z is selected from the group consisting of a covalent single bond and alkylene;
- R<sub>14</sub> is selected from the group consisting of hydrido, alkyl, and haloalkyl;
- 15      R<sub>15</sub> is selected from the group consisting of hydrido, alkyl, and haloalkyl;
- R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group consisting of hydrido and halo;
- R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>10</sub>, R<sub>11</sub>, and R<sub>12</sub> are independently selected from the
- 20     group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy, cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, heterocyclyoxy, aralkylaryl, heteroaryloxyalkyl, heteroarylthio, and heteroarylsulfonyl.
- 25     In an even more preferred embodiment of compounds of Formula I-C, n is the integer 1;
- R<sub>16</sub> is hydrido;

$R_1$  is haloalkyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P);



5         $R_2$  is hydrido;

$R_2$  can be selected from the group consisting of alkyl, haloalkyl, aryl, and haloalkoxy with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ ;

10       $R_3$  is selected from the group consisting of hydrido, alkyl, and haloalkyl with the provisos that  $(CHR_3)_n-N(Ap)Qp$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ ;

Y is alkylene;

Z is covalent single bond;

15       $R_{14}$  is hydrido;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and halo;

20       $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy,

alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy, cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, and heteroaryloxyalkyl.

In an embodiment of compounds of Formula I-C,

5 n is an integer selected from 1 to 3;

$R_1$  is selected from the group consisting of trifluoromethyl,

1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl,

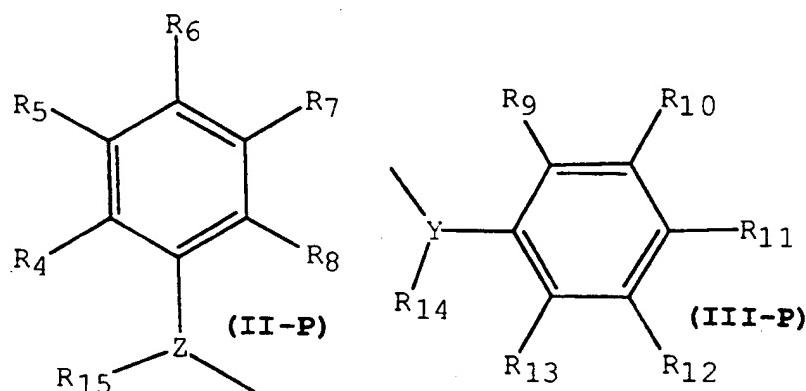
chloromethyl, fluoromethyl, difluoromethyl, chlorodifluoromethyl,

pentafluoroethyl, 2,2,3,3,3-pentafluoropropyl, and heptafluoropropyl with the

10 proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system

ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P)

and Qp is Formula (III-P);



$R_{16}$  is selected from the group consisting of acetyl, benzoyl, dimethyl

15 *tert*-butylsilyl, hydrido, and trimethylsilyl;

$R_2$  is hydrido;

$R_2$  can be selected from the group consisting of methyl, ethyl, propyl,

butyl, isopropyl, isobutyl, vinyl, phenyl, 4-trifluoromethylphenyl, 1,1,2,2-

tetrafluoroethoxymethyl, chloromethyl, trifluoromethoxymethyl, fluoromethyl,

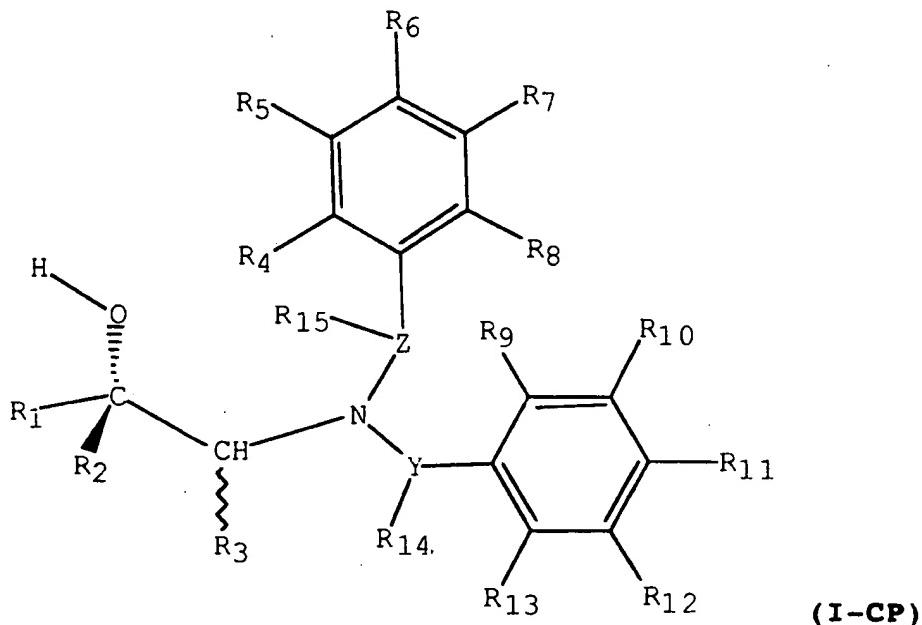
20 difluoromethyl, 2,2,3,3,3-pentafluoropropyl, and and

pentafluorophenoxyethyl with the proviso that  $R_2$  has a lower Cahn-Ingold-

Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ ;

- R<sub>3</sub> is selected from the group consisting of hydrido, hydroxy, cyano, acetyl, methoxy, ethoxy, methyl, ethyl, propyl, vinyl, phenyl, methoxymethyl, 4-trifluoromethylphenyl, trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, chloromethyl, fluoromethyl, difluoromethyl, 5 chlorodifluoromethyl, pentafluoroethyl, 2,2,3,3,3-pentafluoropropyl, heptafluoropropyl, pentafluorophenyl, and pentafluorophenoxyethyl with the provisos that (CH<sub>3</sub>)<sub>n</sub>-N(Ap)Qp has a lower Cahn-Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-Ingold-Prelog stereochemical system ranking than R<sub>2</sub>.

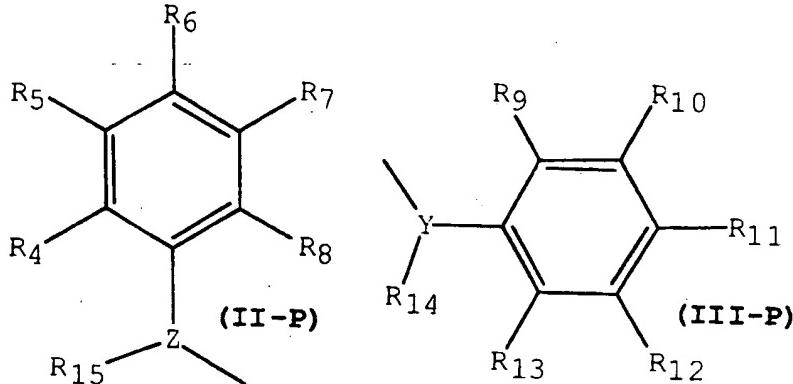
10 In a preferred embodiment of compounds of Formula I-C, compounds have the Formula I-CP:



or a pharmaceutically acceptable salt thereof, wherein;

- R<sub>1</sub> is selected from the group consisting of trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, 15 chlorodifluoromethyl, and pentafluoroethyl with the proviso that R<sub>1</sub> has a

higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CH_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P);

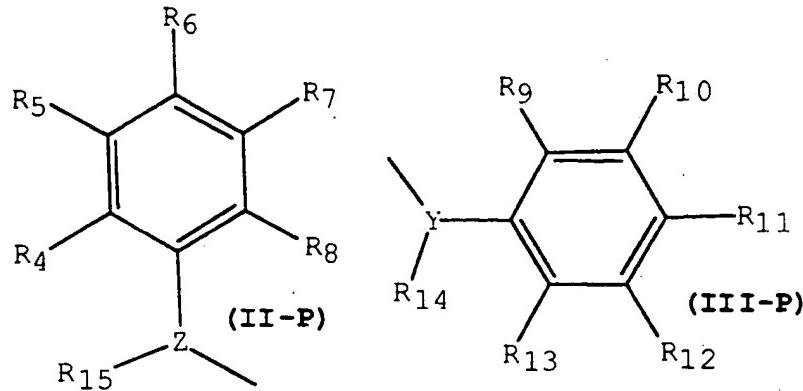


$R_2$  is hydrido;

- 5         $R_2$  can be selected from the group consisting of methyl, ethyl, propyl, butyl, vinyl, phenyl, 4-trifluoromethylphenyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, and 2,2,3,3,3-pentafluoropropyl with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CH_3)_n-N(Ap)Qp$ ;
- 10       $R_3$  is selected from the group consisting of hydrido, phenyl, 4-trifluoromethylphenyl, methyl, ethyl, vinyl, methoxymethyl, trifluoromethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the provisos that  $(CH_3)_n-N(Ap)Qp$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-
- 15      Ingold-Prelog stereochemical system ranking than  $R_2$ .

- In an even more preferred embodiment of compounds of Formula I-CP,
- $R_1$  is selected from the group consisting of trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the proviso that  $R_1$  has a

higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P);

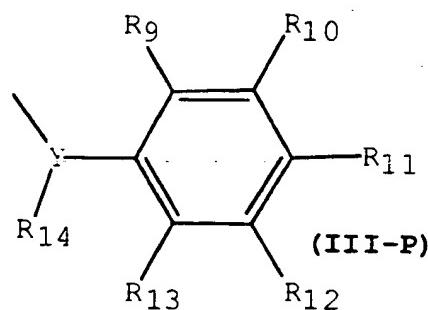
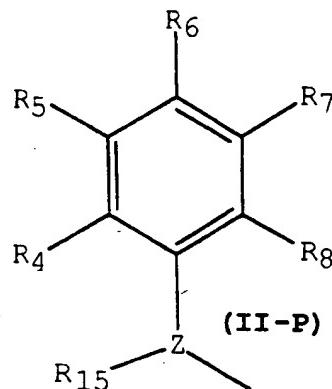


$R_2$  is hydrido:

5         $R_2$  can be selected from the group consisting of methyl, ethyl, phenyl, 4-trifluoromethylphenyl, trifluoromethoxymethyl, 1,1,2,2-tetrafluoroethoxymethyl, difluoromethyl, and 2,2,3,3,3-pentafluoropropyl with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ :

10        $R_3$  is selected from the group consisting of hydrido, phenyl, 4-trifluoromethylphenyl, methyl, trifluoromethyl, difluoromethyl, and chlorodifluoromethyl with the provisos that  $(CHR_3)_n-N(Ap)Qp$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ .

15       In a most preferred embodiment of compounds of Formula I-CP,  $R_1$  is selected from the group consisting of trifluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P);



$R_2$  is hydrido;

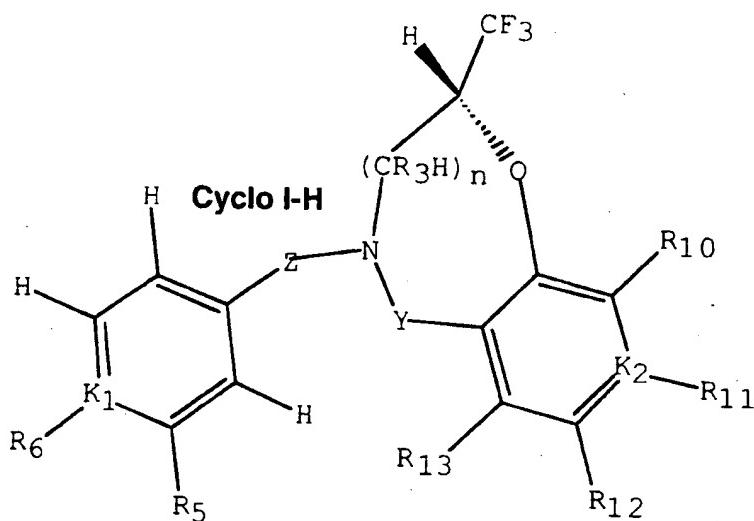
$R_2$  can be phenyl with the proviso that  $R_2$  has a lower Cahn-Ingold-

Prelog system ranking than both  $R_1$  and  $(CH_3)_n-N(Ap)Qp$ ;

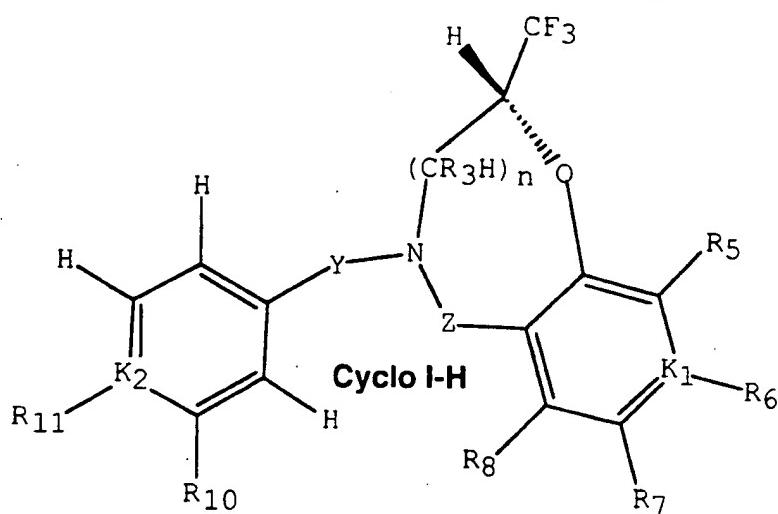
5         $R_3$  is selected from the group consisting of hydrido,

methyl, trifluoromethyl, and difluoromethyl with the provisos that  $(CH_3)_n-N(Ap)Qp$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ .

In another embodiment of compounds of Formulas I-H or I-C, the  
10      compounds correspond to the Cyclo I-H Formulas:



and



**wherein:**

$K_1$  and  $K_2$  are independently selected from the group consisting of C

5 and N;

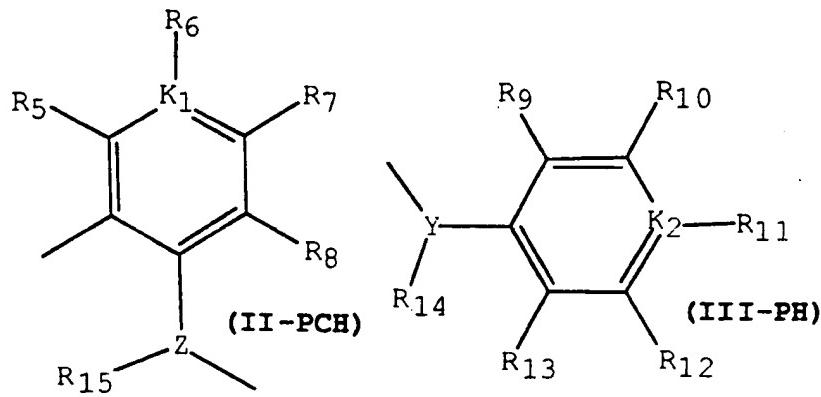
**n** is an integer selected from 1 through 3;

$R_1$  is selected from the group consisting of haloalkyl, haloalkenyl,

haloalkoxymethyl, and haloalkenyloxymethyl with the proviso that R<sub>1</sub> has a

higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and

10  $(CH_3)_n-N(Apch)Qph$  wherein Apch is Formula (II-PCH) and Qph is  
Formula (III-PH);



$R_2$  is hydrido;

$R_2$  is selected from the group consisting of aryl, aralkyl, alkyl, alkenyl,

alkoxyalkyl, alkenyloxyalkyl, haloalkyl, haloalkenyl, halocycloalkyl,

haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy,

- 5 perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, heteroaryl, heteroarylalkyl, dicyanoalkyl, and carboalkoxycyanoalkyl with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(Apch)Qph$ ;

$R_3$  is selected from the group consisting of hydrido, hydroxy, halo,

cyan, aryl, aralkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, heteroaryl,

- 10 alkenyloxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, carboxamide, and carboxamidoalkyl with the provisos that  $(CHR_3)_n-N(Apch)Qph$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than

- 15  $R_2$ ;

$Y$  is selected from the group consisting of a covalent single bond and  $(C(R_{14})_2)_q$  wherein  $q$  is an integer selected from 1 through 2;

$R_{14}$  is selected from the group consisting of hydrido, hydroxy, cyano,

hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkynyl, alkoxyalkyl, haloalkyl,

- 20 haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocarboalkoxycyanoalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, carboalkoxy, carboxamide, and carboxamidoalkyl;

$Z$  is selected from the group consisting of covalent single bond,

$(C(R_{15})_2)_q$  wherein  $q$  is an integer selected from 1 through 2, and

- 25  $(CH(R_{15}))_j-W-(CH(R_{15}))_k$  wherein  $j$  and  $k$  are integers independently selected from 0 through 1;

$W$  is selected from the group consisting of O, C(O), S, S(O), and

$S(O)_2$ ;

$R_{15}$  is selected from the group consisting of hydrido, cyano,

hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkynyl, alkoxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocarboalkoxyalkyl, monocyanooalkyl, dicyanooalkyl,

5 carboalkoxycyanoalkyl, carboalkoxy, carboxamide, and carboxamidoalkyl:

$R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido, halo, haloalkyl, and alkyl;

$R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, carboxy, heteroaralkylthio, heteroaralkoxy,

10 cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclyloxy, aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocyclyl, perhaloaralkyl, aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl, halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl, cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroarylamino, N-

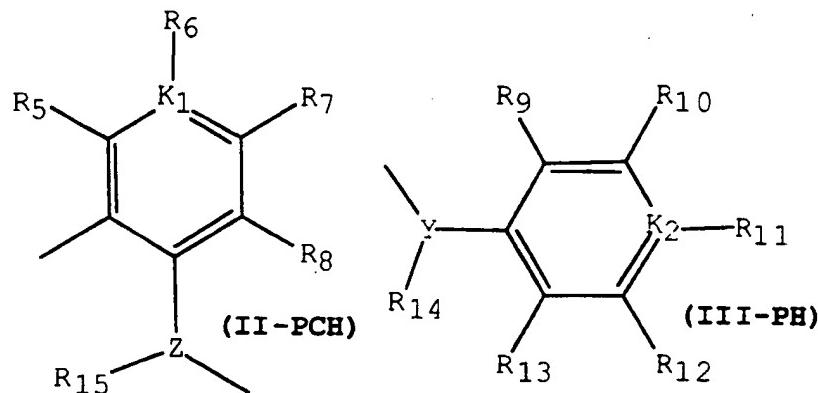
15 heteroarylamino-N-alkylamino, heteroarylaminoalkyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy, cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy, cycloalkenyloxyalkyl, cycloalkylenedioxy, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenyloxy.

20 hydroxy, amino, thio, nitro, lower alkylamino, alkylthio, alkylthioalkyl, arylamino, aralkylamino, arylthio, arylthioalkyl, heteroaralkoxyalkyl, alkylsulfinyl, alkylsulfinylalkyl, arylsulfinylalkyl, arylsulfonylalkyl, heteroarylsulfinylalkyl, heteroarylsulfonylalkyl, alkylsulfonyl, alkylsulfonylalkyl, haloalkylsulfinylalkyl, haloalkylsulfonylalkyl,

25 alkylsulfonamido, alkylaminosulfonyl, amidosulfonyl, monoalkyl amidosulfonyl, dialkyl amidosulfonyl, monoaryl amidosulfonyl, arylsulfonamido, diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl, arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl, heterocyclsulfonyl, heterocyclthio, alkanoyl, alkenoyl,

30 aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl, alkyl, alkenyl, alkynyl, alkenyloxy, alkenyloxyalkyl, alkylenedioxy, haloalkylenedioxy, cycloalkyl, cycloalkylalkanoyl, cycloalkenyl, lower cycloalkylalkyl, lower cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy, hydroxyhaloalkyl, hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl, haloalkoxyalkyl, aryl, heteroarkynyl, aryloxy, aralkoxy, aryloxyalkyl, saturated heterocycl,

- partially saturated heterocyclyl, heteroaryl, heteroaryloxy, heteroaryloxyalkyl, heteroaralkyl, arylalkenyl, heteroarylalkenyl, carboxyalkyl, carboalkoxy, alkoxy-carboxamido, alkylamidocarbonylamido, arylamidocarbonylamido, carboalkoxyalkyl, carboalkoxyalkenyl, carboaralkoxy, carboxamido, carboxamidoalkyl, cyano, carbohaloalkoxy, phosphono, phosphonoalkyl, diaralkoxyphosphono, and diaralkoxyphosphonoalkyl;
- R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, R<sub>7</sub> and R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> can be independently selected to form spacer pairs wherein a spacer pair is taken together to form a linear moiety having from 3 through 6 contiguous atoms connecting the points of bonding of said spacer pair members to form a ring selected from the group consisting of a cycloalkenyl ring having 5 through 8 contiguous members, a partially saturated heterocyclyl ring having 5 through 8 contiguous members, a heteroaryl ring having 5 through 6 contiguous members, and an aryl with the provisos that no more than one of the group consisting of spacer pairs R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub>, can be used at the same time and that no more than one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> can be used at the same time.
- In an embodiment of compounds of Formula Cyclo I-H, n is the integer 1; R<sub>1</sub> is selected from the group consisting of trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and (CH<sub>3</sub>)<sub>n</sub>-N(Apch)Qph wherein Apch is Formula (II-PCH) and Qph is Formula (III-PH);



R<sub>2</sub> is hydrido;

$R_2$  is selected from the group consisting of phenyl,

- 5 4-trifluoromethylphenyl, vinyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, and 2,2,3,3,3-pentafluoropropyl with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-Prelog system ranking than both

R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(Apch)Qph;

$R_3$  is selected from the group consisting of hydrido, methyl, ethyl,

- 10 vinyl, phenyl, 4-trifluoromethylphenyl, methoxymethyl, trifluoromethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the provisos that  $(CH_3)_n-N(Apch)Qph$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ .

15

In another embodiment of compounds of Formula Cyclo I-H, n is the integer 1;

$R_1$  is selected from the group consisting of trifluoromethyl, 1,1,2,2-

- 20 tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl,  
chlorodifluoromethyl, and pentafluoroethyl; .

R<sub>2</sub> is hydrido;

$R_3$  is selected from the group consisting of hydrido, methyl, ethyl, vinyl, phenyl, 4-trifluoromethylphenyl, methoxymethyl, trifluoromethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the provisos that  $(CHR_3)_n-N(Apch)Qph$  has a lower

- 5 Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-  
Ingold-Prelog stereochemical system ranking than  $R_2$ .

In a preferred embodiment of compounds of Formulas I-H, I-C, I-CP, and Cyclo I-H,

- 10 Y is selected from the group consisting of methylene, ethylene, and ethylened;

Z is covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group

consisting of hydrido and fluoro with the proviso that there is no  $R_4$ ,  $R_8$ ,  $R_9$ ,

- 15 or  $R_{13}$  when the embodiment is a compound of Formula Cyclo I-H;

$R_5$  and  $R_{10}$  are independently selected from the group consisting of 4-aminophenoxy, benzoyl, benzyl, benzyloxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy, 4-bromo-2-nitrophenoxy, 3-bromobenzyloxy, 4-bromobenzyloxy, 4-bromophenoxy, 5-bromopyrid-2-yloxy,

- 20 4-butoxyphenoxy, chloro, 3-chlorobenzyl, 2-chlorophenoxy, 4-chlorophenoxy, 4-chloro-3-ethylphenoxy, 3-chloro-4-fluorobenzyl, 3-chloro-4-fluorophenyl, 3-chloro-2-fluorobenzyloxy, 3-chlorobenzyloxy, 4-chlorobenzyloxy, 4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy, 4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy,

- 25 3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy, 4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy, 2-cyanopyrid-3-yloxy, 4-cyanophenoxy, cyclobutoxy, cyclobutyl, cyclohexoxy, cyclohexylmethoxy, cyclopentoxy, cyclopentyl, cyclopentylcarbonyl, cyclopropyl, cyclopropylmethoxy, cyclopropoxy,
- 30 2,3-dichlorophenoxy, 2,4-dichlorophenoxy, 2,4-dichlorophenyl,

- 3,5-dichlorophenyl, 3,5-dichlorobenzyl, 3,4-dichlorophenoxy,  
3,4-difluorophenoxy, 2,3-difluorobenzyl, 2,4-difluorobenzyl, 2,4-difluorobenzyl, 3,4-difluorobenzyl, 2,5-difluorobenzyl, 3,5-difluorophenoxy,  
3,4-difluorophenyl, 3,5-difluorobenzyl, 4-difluoromethoxybenzyl, 4-difluorophenoxy, 2,3-difluorophenoxy, 2,4-difluorophenoxy, 2,5-difluorophenoxy,  
3,5-dimethoxyphenoxy, 3-dimethylaminophenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3,4-dimethylbenzyl, 3,4-dimethylbenzyl, 3,5-dimethylbenzyl, 2,2-dimethylpropoxy, 1,3-dioxan-2-yl, 1,4-dioxan-2-yl, 1,3-dioxolan-2-yl, ethoxy, 4-ethoxyphenoxy, 4-ethylbenzyl, 3-ethylphenoxy, 4-ethylaminophenoxy, 3-ethyl-5-methylphenoxy, fluoro, 4-fluoro-3-methylbenzyl, 4-fluoro-3-methylphenyl, 4-fluoro-3-methylbenzoyl, 4-fluorobenzyl, 2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy, 3-fluorophenoxy, 3-fluoro-2-nitrophenoxy, 2-fluoro-3-trifluoromethylbenzyl, 3-fluoro-5-trifluoromethylbenzyl, 4-fluoro-2-trifluoromethylbenzyl, 4-fluoro-3-trifluoromethylbenzyl, 2-fluorophenoxy, 4-fluorophenoxy, 2-fluoro-3-trifluoromethylphenoxy, 2-fluorobenzyl, 4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy, 4-fluoropyrid-2-yloxy, 2-furyl, 3-furyl, heptafluoropropyl, 1,1,1,3,3,3-hexafluoropropyl, 2-hydroxy-3,3,3-trifluoropropoxy, 3-iodobenzyl, isobutyl, isobutylamino, isobutoxy, 3-isoxazolyl, 4-isoxazolyl, 5-isoxazolyl, isopropoxy, isopropyl, 4-isopropylbenzyl, 3-isopropylphenoxy, 4-isopropylphenoxy, isopropylthio, 4-isopropyl-3-methylphenoxy, 3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl, 3-methoxybenzyl, 4-methoxycarbonylbutoxy, 3-methoxycarbonylprop-2-enyloxy, 4-methoxyphenyl, 3-methoxyphenylamino, 4-methoxyphenylamino, 3-methylbenzyl, 4-methylbenzyl, 3-methylphenoxy, 3-methyl-4-methylthiophenoxy, 4-methylphenoxy, 1-methylpropoxy, 2-methylpyrid-5-yloxy, 4-methylthiophenoxy, 2-naphthyl, 2-nitrophenoxy, 4-nitrophenoxy, 3-nitrophenyl, 4-nitrophenylthio, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl, pentafluoroethyl, pentafluoroethylthio, 2,2,3,3,3-pentafluoropropyl, 1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl, phenoxy, phenylamino, 1-phenylethoxy, phenylsulfonyl, 4-propanoylphenoxy, propoxy, 4-propylphenoxy, 4-propoxyphenoxy, thiophen-3-yl, sec-butyl, 4-sec-butylphenoxy, tert-butoxy, 3-tert-butylphenoxy, 4-tert-butylphenoxy, 1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl,

2-(5,6,7,8-tetrahydronaphthoxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl, thiophen-2-yl, 2,3,5-trifluorobenzylxy, 2,2,2-trifluoroethoxy, 2,2,2-trifluoroethyl, 3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy,

- 5 3-trifluoromethoxybenzylxy, 4-trifluoromethoxybenzylxy, 3-trifluoromethoxyphenoxy, 4-trifluoromethoxyphenoxy, trifluoromethyl, 3-trifluoromethylbenzylxy, 4-trifluoromethylbenzylxy, 2,4-bis-trifluoromethylbenzylxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl, 3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzylxy,
- 10 4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy, 3-trifluoromethylphenyl, 3-trifluoromethylthiobenzylxy, 4-trifluoromethylthiobenzylxy, 2,3,4-trifluorophenoxy, 2,3,4-trifluorophenyl, 2,3,5-trifluorophenoxy, 3,4,5-trimethylphenoxy, 3-difluoromethoxyphenoxy, 3-pentafluoroethylphenoxy.
- 15 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 3-trifluoromethylthiophenoxy, and trifluoromethylthio;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of chloro, fluoro, hydrido, pentafluoroethyl, 1,1,2,2-tetrafluoroethoxy, trifluoromethyl, and trifluoromethoxy;

- 20  $R_7$  and  $R_{12}$  are independently selected from the group consisting of hydrido, fluoro, and trifluoromethyl.

- 25 In an even more preferred embodiment of compounds of Formulas I-H, I-C, I-CP, and Cyclo I-H,

$Y$  is methylene;

$Z$  is covalent single bond;

- $R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro with the proviso that there is no  $R_4$ ,  $R_8$ ,  $R_9$ , or  $R_{13}$  when the embodiment is a compound of Formula Cyclo I-H;

$R_5$  and  $R_{10}$  are independently selected from the group consisting of benzylxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy,

- 3-bromobenzylxyloxy, 4-bromophenoxy, 4-butoxyphenoxy,  
3-chlorobenzylxyloxy, 2-chlorophenoxy, 4-chloro-3-ethylphenoxy,  
4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy,  
5 4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy,  
3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy,  
4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy,  
cyclobutoxy, cyclobutyl, cyclohexylmethoxy, cyclopentoxy, cyclopentyl,  
cyclopentylcarbonyl, cyclopropylmethoxy, 2,3-dichlorophenoxy,  
10 2,4-dichlorophenoxy, 2,4-dichlorophenyl, 3,5-dichlorophenyl,  
3,5-dichlorobenzyl, 3,4-dichlorophenoxy, 3,4-difluorophenoxy,  
2,3-difluorobenzylxyloxy, 3,5-difluorobenzylxyloxy, difluoromethoxy,  
3,5-difluorophenoxy, 3,4-difluorophenyl, 2,3-difluorophenoxy,  
2,4-difluorophenoxy, 2,5-difluorophenoxy, 3,5-dimethoxyphenoxy,  
15 3-dimethylaminophenoxy, 3,4-dimethylbenzylxyloxy, 3,5-dimethylbenzylxyloxy,  
3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 1,3-dioxolan-2-yl,  
3-ethylbenzylxyloxy, 3-ethylphenoxy, 4-ethylaminophenoxy,  
3-ethyl-5-methylphenoxy, 4-fluoro-3-methylbenzyl, 4-fluorobenzylxyloxy,  
2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy, 3-fluorophenoxy,  
20 3-fluoro-2-nitrophenoxy, 2-fluoro-3-trifluoromethylbenzylxyloxy,  
3-fluoro-5-trifluoromethylbenzylxyloxy, 2-fluorophenoxy, 4-fluorophenoxy,  
2-fluoro-3-trifluoromethylphenoxy, 2-fluorobenzylxyloxy,  
4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy, 2-furyl, 3-furyl,  
heptafluoropropyl, 1,1,1,3,3,3-hexafluoropropyl,  
25 2-hydroxy-3,3,3-trifluoropropoxy, isobutoxy, isobutyl, 3-isoxazolyl,  
4-isoxazolyl, 5-isoxazolyl, isopropoxy,  
3-isopropylbenzylxyloxy, 3-isopropylphenoxy, isopropylthio,  
4-isopropyl-3-methylphenoxy, 3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl,  
3-methoxybenzyl, 4-methoxyphenylamino, 3-methylbenzylxyloxy,  
30 4-methylbenzylxyloxy, 3-methylphenoxy, 3-methyl-4-methylthiophenoxy,  
4-methylphenoxy, 1-methylpropoxy, 2-methylpyrid-5-yloxy,  
4-methylthiophenoxy, 2-naphthoxy, 2-nitrophenoxy, 4-nitrophenoxy,  
3-nitrophenyl, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl, pentafluoroethyl,  
pentafluoroethylthio, 2,2,3,3,3-pentafluoropropyl,  
35 1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl, phenoxy,  
phenylamino, 1-phenylethoxy, 4-propylphenoxy, 4-propoxyphenoxy,

- thiophen-3-yl, tert -butoxy, 3-tert -butylphenoxy, 4-tert -butylphenoxy,  
 1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl,  
 2-(5,6,7,8-tetrahydronaphthoxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl,  
 5 thiophen-2-yl, 2,2,2-trifluoroethoxy, 2,2,2-trifluoroethyl,  
 3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy,  
 3-trifluoromethoxybenzyloxy, 4-trifluoromethoxybenzyloxy,  
 4-trifluoromethoxyphenoxy, 3-trifluoromethoxyphenoxy, trifluoromethyl,  
 10 3-trifluoromethylbenzyloxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl,  
 3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzyloxy,  
 4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy,  
 3-trifluoromethylphenyl, 2,3,4-trifluorophenoxy, 2,3,5-trifluorophenoxy,  
 3,4,5-trimethylphenoxy, 3-difluoromethoxyphenoxy,  
 15 3-pentafluoroethylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy,  
 3-trifluoromethylthiophenoxy, 3-trifluoromethylthiobenzyloxy, and  
 trifluoromethylthio;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of chloro, fluoro, hydrido, pentafluoroethyl, 1,1,2,2-tetrafluoroethoxy, and trifluoromethyl;

20  $R_7$  and  $R_{12}$  are independently selected from the group consisting of hydrido, fluoro, and trifluoromethyl.

In a most preferred embodiment of compounds of Formulas I-H, I-C,  
 25 I-CP, and Cyclo I-H,

$Y$  is methylene;

$Z$  is covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro with the proviso that there is no  $R_4$ ,  $R_8$ ,  $R_9$ ,  
 30 or  $R_{13}$  when the embodiment is a compound of Formula Cyclo I-H;

$R_5$  is selected from the group consisting of 5-bromo-2-fluorophenoxy,  
 4-chloro-3-ethylphenoxy, 2,3-dichlorophenoxy, 3,4-dichlorophenoxy, 3-

difluoromethoxyphenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3-ethylphenoxy, 3-ethyl-5-methylphenoxy.

4-fluoro-3-methylphenoxy, 4-fluorophenoxy, 3-isopropylphenoxy, 3-methylphenoxy, 3-pentafluoroethylphenoxy, 3-tert -butylphenoxy,

- 5 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 2-(5,6,7,8-tetrahydronaphthyloxy), 3-trifluoromethoxybenzyloxy,3-trifluoromethoxyphenoxy, 3-trifluoromethylbenzyloxy, and 3-trifluoromethylthiophenoxy;

R<sub>10</sub> is selected from the group consisting of cyclopentyl, 1,1,2,2-tetrafluoroethoxy, 2-furyl, 1,1-bis-trifluoromethyl-1-hydroxymethyl, isobutyl, 10 isoproxy, pentafluoroethyl, trifluoromethoxy, trifluoromethyl, and trifluoromethylthio;

R<sub>6</sub> and R<sub>11</sub> are independently selected from the group consisting of fluoro and hydrido;

- R<sub>7</sub> and R<sub>12</sub> are independently selected from the group consisting of 15 hydrido and fluoro.

## DEFINITIONS

The use of generic terms in the description of the compounds are herein defined for clarity.

- Standard single letter elemental symbols are used to represent specific types 20 of atoms unless otherwise defined. The symbol "C" represents a carbon atom. The symbol "O" represents an oxygen atom. The symbol "N" represents a nitrogen atom. The symbol "P" represents a phosphorus atom. The symbol "S" represents a sulfur atom. The symbol "H" represents a hydrogen atom. Double letter elemental symbols are used as defined for the elements of the periodical table 25 (i.e., Cl represents chlorine, Se represents selenium, etc.).

- As utilized herein, the term "alkyl", either alone or within other terms such as "haloalkyl" and "alkylthio", means an acyclic alkyl radical containing from 1 to about 10, preferably from 1 to about 8 carbon atoms and more preferably 1 to about 6 carbon atoms. Said alkyl radicals may be optionally substituted with 30 groups as defined below. Examples of such radicals include methyl, ethyl, chloroethyl, hydroxyethyl, n-propyl, oxopropyl, isopropyl, n-butyl, cyanobutyl, isobutyl, sec-butyl, tert-butyl, pentyl, aminopentyl, iso-amyl, hexyl, octyl and the like.

The term "alkenyl" refers to an unsaturated, acyclic hydrocarbon radical in so much as it contains at least one double bond. Such alkenyl radicals contain from about 2 to about 10 carbon atoms, preferably from about 2 to about 8 carbon atoms and more preferably 2 to about 6 carbon atoms. Said alkenyl radicals may be

- 5 optionally substituted with groups as defined below. Examples of suitable alkenyl radicals include propenyl, 2-chloropropenyl, buten-1-yl, isobut enyl, penten-1-yl, 2-2-methylbuten-1-yl, 3-methylbuten-1-yl, hexen-1-yl, 3-hydroxyhexen-1-yl, hepten-1-yl, and octen-1-yl, and the like.

The term "alkynyl" refers to an unsaturated, acyclic hydrocarbon radical

- 10 in so much as it contains one or more triple bonds, such radicals containing about 2 to about 10 carbon atoms, preferably having from about 2 to about 8 carbon atoms and more preferably having 2 to about 6 carbon atoms. Said alkynyl radicals may be optionally substituted with groups as defined below. Examples of suitable alkynyl radicals include ethynyl, propynyl,
- 15 hydroxypropynyl, butyn-1-yl, butyn-2-yl, pentyn-1-yl, pentyn-2-yl, 4-methoxypentyn-2-yl, 3-methylbutyn-1-yl, hexyn-1-yl, hexyn-2-yl, hexyn-3-yl, 3,3-dimethylbutyn-1-yl radicals and the like.

The term "hydrido" denotes a single hydrogen atom (H). This hydrido radical may be attached, for example, to an oxygen atom to form a "hydroxyl" radical, one hydrido radical may be attached to a carbon atom to form a "methine" radical (=CH-), or two hydrido radicals may be attached to a carbon atom to form a "methylene" (-CH<sub>2</sub>-) radical.

The term "carbon" radical denotes a carbon atom without any covalent bonds and capable of forming four covalent bonds.

- 25 The term "cyano" radical denotes a carbon radical having three of four covalent bonds shared by a nitrogen atom.

The term "hydroxyalkyl" embraces radicals wherein any one or more of the alkyl carbon atoms is substituted with a hydroxyl as defined above. Specifically embraced are monohydroxyalkyl, dihydroxyalkyl and

30 polyhydroxyalkyl radicals.

- 35 The term "alkanoyl" embraces radicals wherein one or more of the terminal alkyl carbon atoms are substituted with one or more carbonyl radicals as defined below. Specifically embraced are monocarbonylalkyl and dicarbonylalkyl radicals. Examples of monocarbonylalkyl radicals include formyl, acetyl, and pentanoyl. Examples of dicarbonylalkyl radicals include oxanyl, malonyl, and succinyl.

The term "alkylene" radical denotes linear or branched radicals having from 1 to about 10 carbon atoms and having attachment points for two or more covalent bonds. Examples of such radicals are methylene, ethylene, ethylidene, methylethylene, and isopropylidene.

5 The term "alkenylene" radical denotes linear or branched radicals having from 2 to about 10 carbon atoms, at least one double bond, and having attachment points for two or more covalent bonds. Examples of such radicals are 1,1-vinylidene ( $\text{CH}_2=\text{C}$ ), 1,2-vinylidene (- $\text{CH}=\text{CH}-$ ), and 1,4-butadienyl (- $\text{CH}=\text{CH}-\text{CH}=\text{CH}-$ ).

10 The term "halo" means halogens such as fluorine, chlorine, bromine or iodine atoms.

The term "haloalkyl" embraces radicals wherein any one or more of the alkyl carbon atoms is substituted with halo as defined above. Specifically embraced are monohaloalkyl, dihaloalkyl and polyhaloalkyl radicals. A monohaloalkyl radical, for one example, may have either a bromo, chloro or a fluoro atom within the radical. Dihalo radicals may have two or more of the same halo atoms or a combination of different halo radicals and polyhaloalkyl radicals may have more than two of the same halo atoms or a combination of different halo radicals. More preferred haloalkyl radicals are "lower haloalkyl" radicals having one to about six carbon atoms. Examples of such haloalkyl radicals include fluoromethyl, difluoromethyl, trifluoromethyl, chloromethyl, dichloromethyl, trichloromethyl, trifluoroethyl, pentafluoroethyl, heptafluoropropyl, difluorochloromethyl, dichlorofluoromethyl, difluoroethyl, difluoropropyl, dichloroethyl and dichloropropyl.

25 The term "hydroxyhaloalkyl" embraces radicals wherein any one or more of the haloalkyl carbon atoms is substituted with hydroxy as defined above. Examples of "hydroxyhaloalkyl" radicals include hexafluorohydroxypropyl.

The term "haloalkylene radical" denotes alkylene radicals wherein any one or more of the alkylene carbon atoms is substituted with halo as defined above. Dihalo alkylene radicals may have two or more of the same halo atoms or a combination of different halo radicals and polyhaloalkylene radicals may have more than two of the same halo atoms or a combination of different halo radicals. More preferred haloalkylene radicals are "lower haloalkylene" radicals having one to about six carbon atoms. Examples of "haloalkylene" radicals include difluoromethylene, tetrafluoroethylene, tetrachloroethylene,

alkyl substituted monofluoromethylene, and aryl substituted trifluoromethylene.

The term "haloalkenyl" denotes linear or branched radicals having from 1 to about 10 carbon atoms and having one or more double bonds wherein any

- 5 one or more of the alkenyl carbon atoms is substituted with halo as defined above. Dihaloalkenyl radicals may have two or more of the same halo atoms or a combination of different halo radicals and polyhaloalkenyl radicals may have more than two of the same halo atoms or a combination of different halo radicals.

- 10 The terms "alkoxy" and "alkoxyalkyl" embrace linear or branched oxy-containing radicals each having alkyl portions of one to about ten carbon atoms, such as methoxy radical. The term "alkoxyalkyl" also embraces alkyl radicals having one or more alkoxy radicals attached to the alkyl radical, that is, to form monoalkoxyalkyl and dialkoxyalkyl radicals. More preferred alkoxy

- 15 radicals are "lower alkoxy" radicals having one to six carbon atoms. Examples of such radicals include methoxy, ethoxy, propoxy, butoxy, isopropoxy and *tert*-butoxy alkyls. The "alkoxy" radicals may be further substituted with one or more halo atoms, such as fluoro, chloro or bromo, to provide "haloalkoxy" and "haloalkoxyalkyl" radicals. Examples of such haloalkoxy radicals include

- 20 fluoromethoxy, chloromethoxy, trifluoromethoxy, difluoromethoxy, trifluoroethoxy, fluoroethoxy, tetrafluoroethoxy, pentafluoroethoxy, and fluoropropoxy. Examples of such haloalkoxyalkyl radicals include fluoromethoxymethyl, chloromethoxyethyl, trifluoromethoxymethyl, difluoromethoxyethyl, and trifluoroethoxymethyl.

- 25 The terms "alkenyloxy" and "alkenyloxyalkyl" embrace linear or branched oxy-containing radicals each having alkenyl portions of two to about ten carbon atoms, such as ethenyloxy or propenyloxy radical. The term "alkenyloxyalkyl" also embraces alkenyl radicals having one or more alkenyloxy radicals attached to the alkyl radical, that is, to form

- 30 monoalkenyloxyalkyl and dialkenyloxyalkyl radicals. More preferred alkenyloxy radicals are "lower alkenyloxy" radicals having two to six carbon atoms. Examples of such radicals include ethenyloxy, propenyloxy, butenyloxy, and isopropenyloxy alkyls. The "alkenyloxy" radicals may be further substituted with one or more halo atoms, such as fluoro, chloro or bromo, to provide "haloalkenyloxy" radicals. Examples of such radicals include trifluoroethenyloxy, fluoroethenyloxy, difluoroethenyloxy, and fluoropropenyloxy.

- The term "haloalkoxyalkyl" also embraces alkyl radicals having one or more haloalkoxy radicals attached to the alkyl radical, that is, to form monohaloalkoxyalkyl and dihaloalkoxyalkyl radicals. The term "haloalkenyloxy" also embraces oxygen radicals having one or more haloalkenyloxy radicals attached to the oxygen radical, that is, to form monohaloalkenyloxy and dihaloalkenyloxy radicals. The term "haloalkenyloxyalkyl" also embraces alkyl radicals having one or more haloalkenyloxy radicals attached to the alkyl radical, that is, to form monohaloalkenyloxyalkyl and dihaloalkenyloxyalkyl radicals.
- 5        The term "alkylenedioxy" radicals denotes alkylene radicals having at least two oxygens bonded to a single alkylene group. Examples of "alkylenedioxy" radicals include methylenedioxy, ethylenedioxy, alkylsubstituted methylenedioxy, and arylsubstituted methylenedioxy. The term "haloalkylenedioxy" radicals denotes haloalkylene radicals having at least two 10 oxy groups bonded to a single haloalkyl group. Examples of "haloalkylenedioxy" radicals include difluoromethylenedioxy, tetrafluoroethylenedioxy, tetrachloroethylenedioxy, alkylsubstituted monofluoromethylenedioxy, and arylsubstituted monofluoromethylenedioxy.
- 15        The term "aryl", alone or in combination, means a carbocyclic aromatic system containing one, two or three rings wherein such rings may be attached together in a pendant manner or may be fused. The term "fused" means that a second ring is present (ie, attached or formed) by having two adjacent atoms in common (ie, shared) with the first ring. The term "fused" is equivalent to the term "condensed". The term "aryl" embraces aromatic radicals such as phenyl, 20 naphthyl, tetrahydronaphthyl, indane and biphenyl.
- 25        The term "perhaloaryl" embraces aromatic radicals such as phenyl, naphthyl, tetrahydronaphthyl, indane and biphenyl wherein the aryl radical is substituted with 3 or more halo radicals as defined below.
- 30        The term "heterocyclyl" embraces saturated, partially saturated and unsaturated heteroatom-containing ring-shaped radicals having from 5 through 15 ring members selected from carbon, nitrogen, sulfur and oxygen, wherein at least one ring atom is a heteroatom. Heterocyclyl radicals may contain one, two or three rings wherein such rings may be attached in a pendant manner or may be fused. Examples of saturated heterocyclic radicals include saturated 3 to 6-membered heteromonocyclic group containing 1 to 4 nitrogen atoms[e.g. pyrrolidinyl, imidazolidinyl, piperidino, piperazinyl, etc.]; saturated 3 to 6-membered heteromonocyclic group containing 1 to 2 oxygen atoms and 1 to 3 35

nitrogen atoms [e.g. morpholinyl, etc.]; saturated 3 to 6-membered heteromonocyclic group containing 1 to 2 sulfur atoms and 1 to 3 nitrogen atoms [e.g., thiazolidinyl, etc.]. Examples of partially saturated heterocyclyl radicals include dihydrothiophene, dihydropyran, dihydrofuran and dihydrothiazole. Examples of unsaturated heterocyclic radicals, also termed "heteroaryl" radicals, include unsaturated 5 to 6 membered heteromonocyclyl group containing 1 to 4 nitrogen atoms, for example, pyrrolyl, pyrrolinyl, imidazolyl, pyrazolyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, triazolyl [e.g., 4H-1,2,4-triazolyl, 1H-1,2,3-triazolyl, 2H-1,2,3-triazolyl, etc.] tetrazolyl [e.g. 1H-tetrazolyl, 2H-tetrazolyl, etc.], etc.; unsaturated condensed heterocyclic group containing 1 to 5 nitrogen atoms, for example, indolyl, isoindolyl, indolizinyl, benzimidazolyl, quinolyl, isoquinolyl, indazolyl, benzotriazolyl, tetrazolopyridazinyl [e.g., tetrazolo [1,5-b]pyridazinyl, etc.], etc.; unsaturated 3 to 6-membered heteromonocyclic group containing an oxygen atom, for example, pyranyl, 2-furyl, 3-furyl, etc.; unsaturated 5 to 6-membered heteromonocyclic group containing a sulfur atom, for example, 2-thienyl, 3-thienyl, etc.; unsaturated 5- to 6-membered heteromonocyclic group containing 1 to 2 oxygen atoms and 1 to 3 nitrogen atoms, for example, oxazolyl, isoxazolyl, oxadiazolyl [e.g., 1,2,4-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,5-oxadiazolyl, etc.], etc.; unsaturated condensed heterocyclic group containing 1 to 2 oxygen atoms and 1 to 3 nitrogen atoms [e.g. benzoxazolyl, benzoxadiazolyl, etc.]; unsaturated 5 to 6-membered heteromonocyclic group containing 1 to 2 sulfur atoms and 1 to 3 nitrogen atoms, for example, thiazolyl, thiadiazolyl [e.g., 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,5-thiadiazolyl, etc.] etc.; unsaturated condensed heterocyclic group containing 1 to 2 sulfur atoms and 1 to 3 nitrogen atoms [e.g., benzothiazolyl, benzothiadiazolyl, etc.] and the like. The term also embraces radicals where heterocyclic radicals are fused with aryl radicals. Examples of such fused bicyclic radicals include benzofuran, benzothiophene, and the like.

Said "heterocyclyl" group may have 1 to 3 substituents as defined below. Preferred heterocyclic radicals include five to twelve membered fused or unfused radicals. Non-limiting examples of heterocyclic radicals include pyrrolyl, pyridinyl, pyridyloxy, pyrazolyl, triazolyl, pyrimidinyl, pyridazinyl, oxazolyl, thiazolyl, imidazolyl, indolyl, thiophenyl, furanyl, tetrazolyl, 2-pyrrolinyl, 3-pyrrolinyl, pyrrolindinyl, 1,3-dioxolanyl, 2-imidazolinyl, imidazolidinyl, 2-pyrazolinyl, pyrazolidinyl, isoxazolyl, isothiazolyl, 1,2,3-oxadiazolyl, 1,2,3-triazolyl, 1,3,4-thiadiazolyl, 2H-pyranyl, 4H-pyranyl,

piperidinyl, 1,4-dioxanyl, morpholinyl, 1,4-dithianyl, thiomorpholinyl, pyrazinyl, piperazinyl, 1,3,5-triazinyl, 1,3,5-trithianyl, benzo(b)thiophenyl, benzimidazoyl, quinolinyl, tetraazolyl, and the like.

The term "sulfonyl", whether used alone or linked to other terms such as alkylsulfonyl, denotes respectively divalent radicals  $\text{-SO}_2\text{-}$ . "Alkylsulfonyl", 5 embraces alkyl radicals attached to a sulfonyl radical, where alkyl is defined as above. "Alkylsulfonylalkyl", embraces alkylsulfonyl radicals attached to an alkyl radical, where alkyl is defined as above. "Haloalkylsulfonyl", embraces haloalkyl radicals attached to a sulfonyl radical, where haloalkyl is defined as above. "Haloalkylsulfonylalkyl", 10 embraces haloalkylsulfonyl radicals attached to an alkyl radical, where alkyl is defined as above. The term "aminosulfonyl" denotes an amino radical attached to a sulfonyl radical.

The term "sulfinyl", whether used alone or linked to other terms such as alkylsulfinyl, denotes respectively divalent radicals  $\text{-S(O)-}$ . "Alkylsulfinyl", 15 embraces alkyl radicals attached to a sulfinyl radical, where alkyl is defined as above. "Alkylsulfinylalkyl", embraces alkylsulfinyl radicals attached to an alkyl radical, where alkyl is defined as above. "Haloalkylsulfinyl", embraces haloalkyl radicals attached to a sulfinyl radical, where haloalkyl is defined as above. "Haloalkylsulfinylalkyl", 20 embraces haloalkylsulfinyl radicals attached to an alkyl radical, where alkyl is defined as above.

The term "aralkyl" embraces aryl-substituted alkyl radicals. Preferable aralkyl radicals are "lower aralkyl" radicals having aryl radicals attached to alkyl radicals having one to six carbon atoms. Examples of such radicals include benzyl, diphenylmethyl, triphenylmethyl, phenylethyl and diphenylethyl. The terms benzyl and phenylmethyl are interchangeable. 25

The term "heteroaralkyl" embraces heteroaryl-substituted alkyl radicals wherein the heteroaralkyl radical may be additionally substituted with three or more substituents as defined above for aralkyl radicals. The term "perhaloaralkyl" embraces aryl-substituted alkyl radicals wherein the aralkyl radical is substituted with three or more halo radicals as defined above. 30

The term "aralkylsulfinyl", embraces aralkyl radicals attached to a sulfinyl radical, where aralkyl is defined as above. "Aralkylsulfinylalkyl", embraces aralkylsulfinyl radicals attached to an alkyl radical, where alkyl is defined as above.

The term "aralkylsulfonyl", 35 embraces aralkyl radicals attached to a sulfonyl radical, where aralkyl is defined as above. "Aralkylsulfonylalkyl",

embraces aralkylsulfonyl radicals attached to an alkyl radical, where alkyl is defined as above.

The term "cycloalkyl" embraces radicals having three to ten carbon atoms. More preferred cycloalkyl radicals are "lower cycloalkyl" radicals

5 having three to seven carbon atoms. Examples include radicals such as cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl and cycloheptyl. The term "cycloalkylalkyl" embraces cycloalkyl-substituted alkyl radicals. Preferable cycloalkylalkyl radicals are "lower cycloalkylalkyl" radicals having cycloalkyl radicals attached to alkyl radicals having one to six carbon atoms. Examples of

10 such radicals include cyclohexylhexyl. The term "cycloalkenyl" embraces radicals having three to ten carbon atoms and one or more carbon-carbon double bonds. Preferred cycloalkenyl radicals are "lower cycloalkenyl" radicals having three to seven carbon atoms. Examples include radicals such as cyclobutenyl, cyclopentenyl, cyclohexenyl and cycloheptenyl. The term

15 "halocycloalkyl" embraces radicals wherein any one or more of the cycloalkyl carbon atoms is substituted with halo as defined above. Specifically embraced are monohalocycloalkyl, dihalocycloalkyl and polyhalocycloalkyl radicals. A monohalocycloalkyl radical, for one example, may have either a bromo, chloro or a fluoro atom within the radical. Dihalo radicals may have two or more of

20 the same halo atoms or a combination of different halo radicals and polyhalocycloalkyl radicals may have more than two of the same halo atoms or a combination of different halo radicals. More preferred halocycloalkyl radicals are "lower halocycloalkyl" radicals having three to about eight carbon atoms. Examples of such halocycloalkyl radicals include fluorocyclopropyl,

25 difluorocyclobutyl, trifluorocyclopentyl, tetrafluorocyclohexyl, and dichlorocyclopropyl. The term "halocycloalkenyl" embraces radicals wherein any one or more of the cycloalkenyl carbon atoms is substituted with halo as defined above. Specifically embraced are monohalocycloalkenyl, dihalocycloalkenyl and polyhalocycloalkenyl radicals.

30 The term "cycloalkoxy" embraces cycloalkyl radicals attached to an oxy radical. Examples of such radicals includes cyclohexoxy and cyclopentoxy. The term "cycloalkoxyalkyl" also embraces alkyl radicals having one or more cycloalkoxy radicals attached to the alkyl radical, that is, to form

35 monocycloalkoxyalkyl and dicycloalkoxyalkyl radicals. Examples of such radicals include cyclohexoxyethyl. The "cycloalkoxy" radicals may be further substituted with one or more halo atoms, such as fluoro, chloro or bromo, to provide "halocycloalkoxy" and "halocycloalkoxyalkyl" radicals.

The term "cycloalkylalkoxy" embraces cycloalkyl radicals attached to an alkoxy radical. Examples of such radicals includes cyclohexylmethoxy and cyclopentylmethoxy.

The term "cycloalkenyloxy" embraces cycloalkenyl radicals attached to an oxy radical. Examples of such radicals includes cyclohexenyloxy and cyclopentenyloxy. The term "cycloalkenyloxyalkyl" also embraces alkyl radicals having one or more cycloalkenyloxy radicals attached to the alkyl radical, that is, to form monocycloalkenyloxyalkyl and dicycloalkenyloxyalkyl radicals. Examples of such radicals include cyclohexenyloxyethyl. The "cycloalkenyloxy" radicals may be further substituted with one or more halo atoms, such as fluoro, chloro or bromo, to provide "halocycloalkenyloxy" and "halocycloalkenyloxyalkyl" radicals.

The term "cycloalkylenedioxy" radicals denotes cycloalkylene radicals having at least two oxygens bonded to a single cycloalkylene group. Examples of "alkylenedioxy" radicals include 1,2-dioxycyclohexylene.

The term "cycloalkylsulfinyl", embraces cycloalkyl radicals attached to a sulfinyl radical, where cycloalkyl is defined as above. "Cycloalkylsulfinylalkyl", embraces cycloalkylsulfinyl radicals attached to an alkyl radical, where alkyl is defined as above. The term "Cycloalkylsulfonyl", embraces cycloalkyl radicals attached to a sulfonyl radical, where cycloalkyl is defined as above. "Cycloalkylsulfonylalkyl", embraces cycloalkylsulfonyl radicals attached to an alkyl radical, where alkyl is defined as above.

The term "cycloalkylalkanoyl" embraces radicals wherein one or more of the cycloalkyl carbon atoms are substituted with one or more carbonyl radicals as defined below. Specifically embraced are monocarbonylcycloalkyl and dicarbonylcycloalkyl radicals. Examples of monocarbonylcycloalkyl radicals include cyclohexylcarbonyl, cyclohexylacetyl, and cyclopentylcarbonyl. Examples of dicarbonylcycloalkyl radicals include 1,2-dicarbonylcyclohexane..

The term "alkylthio" embraces radicals containing a linear or branched alkyl radical, of one to ten carbon atoms, attached to a divalent sulfur atom. More preferred alkylthio radicals are "lower alkylthio" radicals having one to six carbon atoms. An example of "lower alkylthio" is methylthio ( $\text{CH}_3\text{-S-}$ ). The "alkylthio" radicals may be further substituted with one or more halo atoms, such as fluoro, chloro or bromo, to provide "haloalkylthio" radicals. Examples of such radicals include fluoromethylthio, chloromethylthio,

trifluoromethylthio, difluoromethylthio, trifluoroethylthio, fluoroethylthio, tetrafluoroethylthio, pentafluoroethylthio, and fluoropropylthio.

The term "alkyl aryl amino" embraces radicals containing a linear or branched alkyl radical, of one to ten carbon atoms, and one aryl radical both attached to an amino radical. Examples include N-methyl-4-methoxyaniline, N-ethyl-4-methoxyaniline, and N-methyl-4-trifluoromethoxyaniline.

The terms alkylamino denotes "monoalkylamino" and "dialkylamino" containing one or two alkyl radicals, respectively, attached to an amino radical.

The terms arylamino denotes "monoaryl amino" and "diaryl amino" containing one or two aryl radicals, respectively, attached to an amino radical. Examples of such radicals include N-phenylamino and N-naphthylamino.

The term "aralkylamino", embraces aralkyl radicals attached to an amino radical, where aralkyl is defined as above. The term aralkylamino denotes "monoaralkylamino" and "diaralkylamino" containing one or two aralkyl radicals, respectively, attached to an amino radical. The term aralkylamino further denotes "monoaralkyl monoalkylamino" containing one aralkyl radical and one alkyl radical attached to an amino radical.

The term "arylsulfinyl" embraces radicals containing an aryl radical, as defined above, attached to a divalent S(=O) atom. The term "arylsulfinylalkyl" denotes arylsulfinyl radicals attached to a linear or branched alkyl radical, of one to ten carbon atoms.

The term "arylsulfonyl", embraces aryl radicals attached to a sulfonyl radical, where aryl is defined as above. "arylsulfonylalkyl", embraces arylsulfonyl radicals attached to an alkyl radical, where alkyl is defined as above. The term "heteroarylsulfinyl" embraces radicals containing a heteroaryl radical, as defined above, attached to a divalent S(=O) atom. The term "heteroarylsulfinylalkyl" denotes heteroarylsulfinyl radicals attached to a linear or branched alkyl radical, of one to ten carbon atoms. The term "Heteroarylsulfonyl", embraces heteroaryl radicals attached to a sulfonyl radical, where heteroaryl is defined as above. "Heteroarylsulfonylalkyl", embraces heteroarylsulfonyl radicals attached to an alkyl radical, where alkyl is defined as above.

The term "aryloxy" embraces aryl radicals, as defined above, attached to an oxygen atom. Examples of such radicals include phenoxy, 4-chloro-3-ethylphenoxy, 4-chloro-3-methylphenoxy, 3-chloro-4-ethylphenoxy, 3,4-dichlorophenoxy, 4-methylphenoxy, 3-trifluoromethoxyphenoxy, 3-trifluoromethylphenoxy, 4-fluorophenoxy, 3,4-dimethylphenoxy, 5-bromo-2-

fluorophenoxy, 4-bromo-3-fluorophenoxy, 4-fluoro-3-methylphenoxy, 5,6,7,8-tetrahydronaphthoxy, 3-isopropylphenoxy, 3-cyclopropylphenoxy, 3-ethylphenoxy, 4-*tert*-butylphenoxy, 3-pentafluoroethylphenoxy, and 3-(1,1,2,2-tetrafluoroethoxy)phenoxy.

5        The term "aroyl" embraces aryl radicals, as defined above, attached to an carbonyl radical as defined above. Examples of such radicals include benzoyl and toluoyl.

10      The term "aralkanoyl" embraces aralkyl radicals, as defined herein, attached to an carbonyl radical as defined above. Examples of such radicals include, for example, phenylacetyl.

15      The term "aralkoxy" embraces oxy-containing aralkyl radicals attached through an oxygen atom to other radicals. More preferred aralkoxy radicals are "lower aralkoxy" radicals having phenyl radicals attached to lower alkoxy radical as described above. Examples of such radicals include benzyloxy, 1-phenylethoxy, 3-trifluoromethoxybenzyloxy, 3-trifluoromethylbenzyloxy, 3,5-difluorobenzyloxy, 3-bromobenzyloxy, 4-propylbenzyloxy, 2-fluoro-3-trifluoromethylbenzyloxy, and 2-phenylethoxy.

20      The term "aryloxyalkyl" embraces aryloxy radicals, as defined above, attached to an alkyl group. Examples of such radicals include phenoxyethyl.

25      The term "haloaryloxyalkyl" embraces aryloxyalkyl radicals, as defined above, wherein one to five halo radicals are attached to an aryloxy group.

30      The term "heteroaroyl" embraces heteroaryl radicals, as defined above, attached to an carbonyl radical as defined above. Examples of such radicals include furoyl and nicotinyl.

25      The term "heteroaralkanoyl" embraces heteroaralkyl radicals, as defined herein, attached to an carbonyl radical as defined above. Examples of such radicals include, for example, pyridylacetyl and furylbutyryl.

30      The term "heteroaralkoxy" embraces oxy-containing heteroaralkyl radicals attached through an oxygen atom to other radicals. More preferred heteroaralkoxy radicals are "lower heteroaralkoxy" radicals having heteroaryl radicals attached to lower alkoxy radical as described above.

35      The term "haloheteroaryloxyalkyl" embraces heteroaryloxyalkyl radicals, as defined above, wherein one to four halo radicals are attached to an heteroaryloxy group.

35      The term "heteroaryl amino" embraces heterocycll radicals, as defined above, attached to an amino group. Examples of such radicals include pyridylamino.

The term "heteroaryl aminoalkyl" embraces heteroaryl amino radicals, as defined above, attached to an alkyl group. Examples of such radicals include pyridylmethylamino.

5 The term "heteroaryloxy" embraces heterocyclyl radicals, as defined above, attached to an oxy group. Examples of such radicals include 2-thiophenyloxy, 2-pyrimidyloxy, 2-pyridyloxy, 3-pyridyloxy, and 4-pyridyloxy.

10 The term "heteroaryloxyalkyl" embraces heteroaryloxy radicals, as defined above, attached to an alkyl group. Examples of such radicals include 2-pyridyloxymethyl, 3-pyridyloxyethyl, and 4-pyridyloxymethyl.

The term "arylthio" embraces aryl radicals, as defined above, attached to an sulfur atom. Examples of such radicals include phenylthio.

15 The term "arylthioalkyl" embraces arylthio radicals, as defined above, attached to an alkyl group. Examples of such radicals include phenylthiomethyl.

20 The term "alkylthioalkyl" embraces alkylthio radicals, as defined above, attached to an alkyl group. Examples of such radicals include methylthiomethyl. The term "alkoxyalkyl" embraces alkoxy radicals, as defined above, attached to an alkyl group. Examples of such radicals include methoxymethyl.

25 The term "carbonyl" denotes a carbon radical having two of the four covalent bonds shared with an oxygen atom. The term "carboxy" embraces a hydroxyl radical, as defined above, attached to one of two unshared bonds in a carbonyl group. The term "carboxamide" embraces amino, monoalkylamino, dialkylamino, monocycloalkylamino, alkylcycloalkylamino, and dicycloalkylamino radicals, attached to one of two unshared bonds in a carbonyl group. The term "carboxamidoalkyl" embraces carboxamide radicals, as defined above, attached to an alkyl group. The term "carboxyalkyl" embraces a carboxy radical, as defined above, attached to an alkyl group. The term "carboalkoxy" embraces alkoxy radicals, as defined above, attached to one of two unshared bonds in a carbonyl group. The term "carboaralkoxy" embraces aralkoxy radicals, as defined above, attached to one of two unshared bonds in a carbonyl group. The term "monocarboalkoxyalkyl" embraces one carboalkoxy radical, as defined above, attached to an alkyl group. The term "dicarboalkoxyalkyl" embraces two carboalkoxy radicals, as defined above, attached to an alkylene group. The term "monocyanoalkyl" embraces one cyano radical, as defined above, attached to an alkyl group. The term "dicyanoalkylene" embraces two cyano radicals, as defined above.

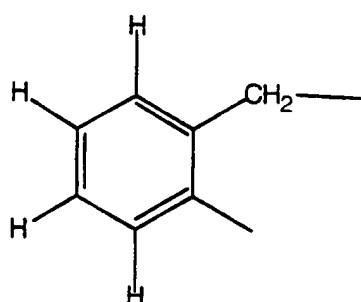
above, attached to an alkyl group. The term "carboalkoxycyanoalkyl" embraces one cyano radical, as defined above, attached to an carboalkoxyalkyl group.

The term "acyl", alone or in combination, means a carbonyl or thionocarbonyl group bonded to a radical selected from, for example, hydrido,

- 5 alkyl, alkenyl, alkynyl, haloalkyl, alkoxy, alkoxyalkyl, haloalkoxy, aryl, heterocyclyl, heteroaryl, alkylsulfinylalkyl, alkylsulfonylalkyl, aralkyl, cycloalkyl, cycloalkylalkyl, cycloalkenyl, alkylthio, arylthio, amino, alkylamino, dialkylamino, aralkoxy, arylthio, and alkylthioalkyl. Examples of "acyl" are formyl, acetyl, benzoyl, trifluoroacetyl, phthaloyl, malonyl, nicotinyl, and the like.
- 10 The term "haloalkanoyl" embraces one or more halo radicals, as defined herein, attached to an alkanoyl radical as defined above. Examples of such radicals include, for example, chloroacetyl, trifluoroacetyl, bromopropanoyl, and heptafluorobutanoyl. The term "diacyl", alone or in combination, means having two or more carbonyl or thionocarbonyl groups bonded to a radical selected from.
- 15 for example, alkylene, alkenylene, alkynylene, haloalkylene, alkoxyalkylene, aryl, heterocyclyl, heteroaryl, aralkyl, cycloalkyl, cycloalkylalkyl, and cycloalkenyl. Examples of "diacyl" are phthaloyl, malonyl, succinyl, adipoyl, and the like.

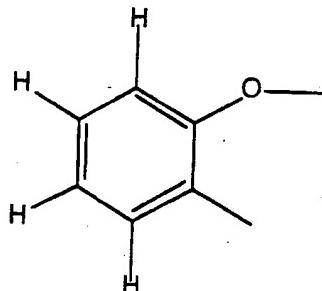
The term "benzylideny" radical denotes substituted and unsubstituted benzyl groups having attachment points for two covalent bonds. One attachment

- 20 point is through the methylene of the benzyl group with the other attachment point through an ortho carbon of the phenyl ring. The methylene group is designated for attached to the lowest numbered position. Examples include the base compound benzylidene of structure:



- 25 The term "phenoxylideny" radical denotes substituted and unsubstituted phenoxy groups having attachment points for two covalent bonds. One attachment point is through the oxy of the phenoxy group with the other attachment point through an ortho carbon of the phenyl ring. The oxy group is designated for

attached to the lowest numbered position. Examples include the base compound phenoxylidene of structure:



- 5      The term "phosphono" embraces a pentavalent phosphorus attached with  
two covalent bonds to an oxygen radical. The term "dialkoxyphosphono" denotes  
two alkoxy radicals, as defined above, attached to a phosphono radical with two  
covalent bonds. The term "diaralkoxyphosphono" denotes two aralkoxy radicals,  
as defined above, attached to a phosphono radical with two covalent bonds. The  
term "dialkoxyphosphonoalkyl" denotes dialkoxyphosphono radicals, as defined  
above, attached to an alkyl radical. The term "diaralkoxyphosphonoalkyl" denotes  
10     diaralkoxyphosphono radicals, as defined above, attached to an alkyl radical.

Said "alkyl", "alkenyl", "alkynyl", "alkanoyl", "alkylene", "alkenylene",  
"benzylideny", "phenoxylideny", "hydroxyalkyl", "haloalkyl", "haloalkylene",  
"haloalkenyl", "alkoxy", "alkenyoxy", "alkenyloxyalkyl", "alkoxyalkyl", "aryl",  
15     "perhaloaryl", "haloalkoxy", "haloalkoxyalkyl", "haloalkenyoxy",  
"haloalkenyoxyalkyl", "alkylenedioxy", "haloalkylenedioxy", "heterocycl",  
"heteraryl", "hydroxyhaloalkyl", "alkylsulfonyl", "haloalkylsulfonyl",  
"alkylsulfonylalkyl", "haloalkylsulfonylalkyl", "alkylsulfinyl",  
"alkylsulfinylalkyl", "haloalkylsulfinylalkyl", "aralkyl", "heteroaralkyl",  
20     "perhaloaralkyl", "aralkylsulfonyl", "aralkylsulfonylalkyl", "aralkylsulfinyl",  
"aralkylsulfinylalkyl", "cycloalkyl", "cycloalkylalkanoyl", "cycloalkylalkyl",  
"cycloalkenyl", "halocycloalkyl", "halocycloalkenyl", "cycloalkylsulfinyl",  
"cycloalkylsulfinylalkyl", "cycloalkylsulfonyl", "cycloalkylsulfonylalkyl",  
"cycloalkoxy", "cycloalkoxyalkyl", "cycloalkylalkoxy", "cycloalkenyoxy",  
25     "cycloalkenyoxyalkyl", "cycloalkylenedioxy", "halocycloalkoxy",  
"halocycloalkoxyalkyl", "halocycloalkenyoxy", "halocycloalkenyoxyalkyl",  
"alkylthio", "haloalkylthio", "alkylsulfinyl", "amino", "oxy", "thio", "alkylamino",  
"arylamin", "aralkylamin", "arylsulfinyl", "arylsulfinylalkyl", "arylsulfonyl",  
"arylsulfonylalkyl", "heteroarylsulfinyl", "heteroarylsulfinylalkyl".

- "heteroarylsulfonyl", "heteroarylsulfonylalkyl", "heteroaryl amino",  
 "heteroaryl aminoalkyl", "heteroaryloxy", "heteroaryloxylalkyl", "aryloxy",  
 "aroyl", "aralkanoyl", "aralkoxy", "aryloxyalkyl", "haloaryloxyalkyl".  
 "heteroaroyl", "heteroaralkanoyl", "heteroaralkoxy", "heteroaralkoxyalkyl".  
 5 "arylthio", "arylthioalkyl", "alkoxyalkyl", "acyl" and "diacyl" groups defined  
 above may optionally have 1 to 5 non-hydrido substituents such as perhaloaralkyl,  
 aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl,  
 halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl,  
 cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroaryl amino, N-heteroaryl amino-  
 10 N-alkyl amino, heteroaryl aminoalkyl, heteroaryloxy, heteroaryloxylalkyl,  
 haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy,  
 cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy,  
 cycloalkenyloxyalkyl, cycloalkylenedioxy, halocycloalkoxy, halocycloalkoxyalkyl,  
 halocycloalkenyloxy, halocycloalkenyloxyalkyl, hydroxy, amino, thio, nitro,  
 15 lower alkyl amino, alkylthio, alkylthioalkyl, aryl amino, aralkyl amino, arylthio,  
 arylthioalkyl, heteroaralkoxyalkyl, alkylsulfinyl, alkylsulfinylalkyl,  
 arylsulfinylalkyl, arylsulfonylalkyl, heteroaryl sulfinylalkyl,  
 heteroaryl sulfonylalkyl, alkylsulfonyl, alkylsulfonylalkyl, haloalkylsulfinylalkyl,  
 haloalkylsulfonylalkyl, alkylsulfonamido, alkylaminosulfonyl, amidosulfonyl,  
 20 monoalkyl amidosulfonyl, dialkyl amidosulfonyl, monoaryl amidosulfonyl,  
 arylsulfonamido, diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl,  
 arylsulfinyl, arylsulfonyl, heteroarylthio, heteroaryl sulfinyl, heteroaryl sulfonyl,  
 alkanoyl, alkenoyl, aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl,  
 alkyl, alkenyl, alkynyl, alkenyloxy, alkenyloxyalkyl, alkylenedioxy,  
 25 haloalkylenedioxy, cycloalkyl, cycloalkylalkanoyl, cycloalkenyl, lower  
 cycloalkylalkyl, lower cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy,  
 hydroxyhaloalkyl, hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl,  
 haloalkoxyalkyl, aryl, aralkyl, aryloxy, aralkoxy, aryloxyalkyl, saturated  
 heterocycl, partially saturated heterocycl, heteroaryl, heteroaryloxy,  
 30 heteroaryloxyalkyl, arylalkyl, heteroarylalkyl, arylalkenyl, heteroarylalkenyl,  
 carboxyalkyl, carboalkoxy, alcoxycarbonyl, carboaralkoxy, carboxamido,  
 carboxamidoalkyl, cyano, carbohaloalkoxy, phosphono, phosphonoalkyl,  
 diaralkoxyphosphono, and diaralkoxyphosphonoalkyl.

The term "spacer" can include a covalent bond and a linear moiety  
 35 having a backbone of 1 to 7 continuous atoms. The spacer may have 1 to 7

- atoms of a univalent or multi-valent chain. Univalent chains may be constituted by a radical selected from =C(H)-, =C(R<sub>17</sub>)-, -O-, -S-, -S(O)-,
- S(O)<sub>2</sub>-, -NH-, -N(R<sub>17</sub>)-, -N=, -CH(OH)-, =C(OH)-, -CH(OR<sub>17</sub>)-,
- =C(OR<sub>17</sub>)-, and -C(O)- wherein R<sub>17</sub> is selected from alkyl, alkenyl, alkynyl,
- 5      aryl, heteroaryl, aralkyl, aryloxyalkyl, alkoxyalkyl, alkylthioalkyl, arylthioalkyl, cycloalkyl, cycloalkylalkyl, haloalkyl, haloalkenyl, haloalkoxyalkyl, perhaloaralkyl, heteroarylalkyl, heteroaryloxyalkyl, heteroarylthioalkyl, and heteroarylalkenyl. Multi-valent chains may consist of a straight chain of 1 or 2 or 3 or 4 or 5 or 6 or 7 atoms or a straight chain of 1
- 10     or 2 or 3 or 4 or 5 or 6 atoms with a side chain. The chain may be constituted of one or more radicals selected from: lower alkylene, lower alkenyl, -O-, -O-
- CH<sub>2</sub>- , -S-CH<sub>2</sub>- , -CH<sub>2</sub>CH<sub>2</sub>- , ethenyl, -CH=CH(OH)-,
- OCH<sub>2</sub>O-, -O(CH<sub>2</sub>)<sub>2</sub>O-, -NHCH<sub>2</sub>- , -OCH(R<sub>17</sub>)O-, -O(CH<sub>2</sub>CHR<sub>17</sub>)O-,
- OCF<sub>2</sub>O-, -O(CF<sub>2</sub>)<sub>2</sub>O-, -S-, -S(O)-, -S(O)<sub>2</sub>- , -N(H)-, -N(H)O-,
- 15     -N(R<sub>17</sub>)O-, -N(R<sub>17</sub>)-, -C(O)-, -C(O)NH-, -C(O)NR<sub>17</sub>-, -N=, -OCH<sub>2</sub>- ,
- SCH<sub>2</sub>- , S(O)CH<sub>2</sub>- , -CH<sub>2</sub>C(O)-, -CH(OH)-, =C(OH)-, -CH(OR<sub>17</sub>)-,
- =C(OR<sub>17</sub>)-, S(O)<sub>2</sub>CH<sub>2</sub>- , and -NR<sub>17</sub>CH<sub>2</sub>- and many other radicals defined above or generally known or ascertained by one of skill-in-the art. Side chains may include substituents such as 1 to 5 non-hydrido substituents such as
- 20     perhaloaralkyl, aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl, halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl, cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroaryl amino, N-heteroaryl amino-N-alkyl amino, heteroaryl aminoalkyl, heteroaryloxy, heteroaryloxyalkyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy, cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy, cycloalkenyloxyalkyl, cycloalkylenedioxy, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenyoxy, halocycloalkenyoxyalkyl, hydroxy, amino, thio, nitro, lower alkyl amino, alkylthio, alkylthioalkyl, aryl amino, aralkyl amino, arylthio,
- 25     arylthioalkyl, heteroaralkoxyalkyl, alkylsulfinyl, alkylsulfinylalkyl, alkylsulfinyl, arylsulfinylalkyl, arylsulfonylalkyl, heteroarylsulfinylalkyl,
- 30     arylsulfinylalkyl, arylsulfonylalkyl, heteroarylsulfinylalkyl,

- heteroarylsulfonylalkyl, alkylsulfonyl, alkylsulfonylalkyl,  
haloalkylsulfinylalkyl, haloalkylsulfonylalkyl, alkylsulfonamido.  
alkylaminosulfonyl, amidosulfonyl, monoalkyl amidosulfonyl, dialkyl  
amidosulfonyl, monoaryl amidosulfonyl, arylsulfonamido,
- 5       diaryl amidosulfonyl, monoalkyl monoaryl amidosulfonyl, arylsulfinyl,  
arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl, alkanoyl,  
alkenoyl, aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl,  
alkyl, alkenyl, alkynyl, alkenyloxy, alkenyloxyalkyl, alkyleneedioxy,  
haloalkyleneedioxy, cycloalkyl, cycloalkenyl, lower cycloalkylalkyl, lower  
10      cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy, hydroxyhaloalkyl,  
hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl, haloalkoxyalkyl, aryl,  
aralkyl, aryloxy, aralkoxy, aryloxyalkyl, saturated heterocycl, partially  
saturated heterocycl, heteroaryl, heteroaryloxy, heteroaryloxyalkyl, arylalkyl,  
heteroarylalkyl, arylalkenyl, heteroarylalkenyl, carboxyalkyl, carboalkoxy,  
15      carboalkoxy, carboxamido, carboxamidoalkyl, cyano, carbohaloalkoxy,  
phosphono, phosphonoalkyl, diaralkoxyphosphono, and  
diaralkoxyphosphonoalkyl.
- Chiral compounds of the present invention have a hydroxyl group  
substituent on a chiral carbon of the alkanol and propanol compounds of the  
20     present invention specifically in the R-stereoisomeric configuration based on the  
Cahn-Ingold-Prelog convention for stereoisomeric carbon atoms. The R-  
stereoisomeric configuration compounds of the present invention may optionally  
have one or more additional chiral carbons present in each compound. The R-  
stereoisomeric configuration compounds of the present invention can exist in  
25     tautomeric, geometric, and other stereoisomeric forms. The present invention  
having a hydroxyl group substituent on a chiral carbon of the alkanol and propanol  
compounds in the R-stereoisomeric configuration contemplates all such forms of  
said invented compounds, including cis- and trans-geometric isomers, E- and Z-  
geometric isomers, diastereomers, and other mixtures thereof, as falling within the  
30     scope of the invention. Pharmaceutically acceptable sales of such tautomeric,  
geometric or stereoisomeric forms are also included within the invention. The  
standard definitions for the Cahn-Ingold-Prelog convention and stereochemical  
system can be found in Pure Applied Chemistry, 1976, Vol. 45, pages 15-30 and  
Cahn et al., Angewandte Chemie International Edition English, 1966, Vol. 5,  
35     pages 385-415.

The terms "cis" and "trans" denote a form of geometric isomerism in  
which two carbon atoms connected by a double bond will each have a

hydrogen atom on the same side of the double bond ("cis") or on opposite sides of the double bond ("trans").

Some of the compounds described contain alkenyl groups, and are meant to include both cis and trans or "E" and "Z" geometric forms.

5 Some of the compounds described contain one or more stereocenters in addition to said hydroxyl group substituent on a chiral carbon of the alkanol and propanol compounds in the R-stereoisomeric configuration and are meant to include R, S, and mixtures of R and S forms for each additional stereocenter present.

10 Some of the compounds described herein may contain one or more ketonic or aldehydic carbonyl groups or combinations thereof alone or as part of a heterocyclic ring system. Such carbonyl groups may exist in part or principally in the "keto" form and in part or principally as one or more "enol" forms of each aldehyde and ketone group present. Compounds of the present 15 invention having aldehydic or ketonic carbonyl groups are meant to include both "keto" and "enol" tautomeric forms.

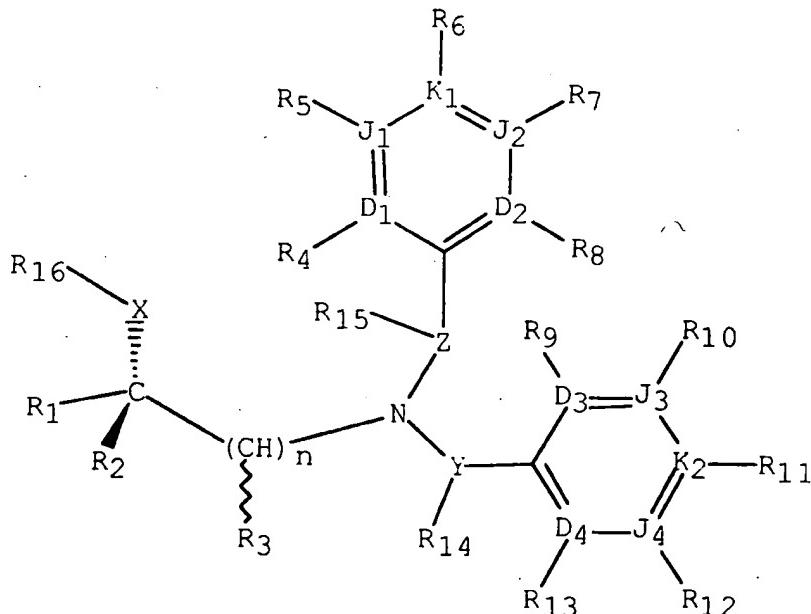
20 Some of the compounds described herein may contain one or more amide carbonyl groups or combinations thereof alone or as part of a heterocyclic ring system. Such carbonyl groups may exist in part or principally in the "keto" form and in part or principally as one or more "enol" forms of each amide group present. Compounds of the present invention having amidic carbonyl groups are meant to include both "keto" and "enol" tautomeric forms. Said amide carbonyl groups may be both oxo (C=O) and thiono (C=S) in type.

25 Some of the compounds described herein may contain one or more imine or enamine groups or combinations thereof. Such groups may exist in part or principally in the "imine" form and in part or principally as one or more "enamine" forms of each group present. Compounds of the present invention having said imine or enamine groups are meant to include both "imine" and "enamine" tautomeric forms.

30 The following general synthetic sequences are useful in making the present invention. Abbreviations used in the schemes are as follows: "AA" represents amino acids, "BINAP" represents 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl, "Boc" represents tert-butyloxycarbonyl, "BOP" represents benzotriazol-1-yl-oxy-tris-(dimethylamino), "bu" represents butyl, "dba" 35 represents dibenzylideneacetone, "DCC" represents 1,3-dicyclohexylcarbodiimide, "DIBAH" represents diisobutylaluminum hydride, "DIPEA" represents diisopropylethylamine, "DMF" represents

dimethylformamide. "DMSO" represents dimethylsulfoxide. "Fmoc" represents 9-fluorenylmethoxycarbonyl. "LDA" represents lithium diisopropylamide. "PHTH" represents a phthaloyl group. "pnZ" represents 4-nitrobenzyloxycarbonyl, "PTC" represents a phase transfer catalyst. "p-TsOH" represents paratoluenesulfonic acid. "TBAF" represents tetrabutylammonium fluoride, "TBTU" represents 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate. "TEA" represents triethylamine, "TFA" represents trifluoroacetic acid, "THF" represents tetrahydrofuran, "TMS" represents trimethylsilyl, and "Z" represents benzyloxycarbonyl.

- 10       The present invention comprises a pharmaceutical composition comprising a therapeutically-effective amount of a compound of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP in association with at least one pharmaceutically-acceptable carrier, adjuvant or diluent.
- 15       The present invention also comprises a treatment and prophylaxis of coronary artery disease and other CETP-mediated disorders in a subject, comprising administering to the subject having such disorder a therapeutically-effective amount of a compound of Formula I-H:



20

or a pharmaceutically-acceptable salt thereof, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>,

R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>13</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>16</sub>, X, Y, and Z are as defined above for the compounds of Formula I-H.

As a further embodiment, compounds of the present invention of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP or a pharmaceutically-acceptable salt thereof as defined above comprise a treatment and prophylaxis of coronary artery disease and other CETP-mediated

- 5 disorders in a subject, comprising administering to the subject having such disorder a therapeutically-effective amount of compounds I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP of the present invention or a pharmaceutically-acceptable salt thereof.

Compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H,

- 10 Cyclo I-C, and Cyclo I-CP are capable of inhibiting activity of cholestryl ester transfer protein (CETP), and thus could be used in the manufacture of a medicament, a method for the prophylactic or therapeutic treatment of diseases mediated by CETP, such as peripheral vascular disease, hyperlipidaemia, hypercholesterolemia, and other diseases attributable to either high LDL and  
15 low HDL or a combination of both, or a procedure to study the mechanism of action of the cholestryl ester transfer protein (CETP) to enable the design of better inhibitors. The compounds of Formula I-H would be also useful in prevention of cerebral vascular accident (CVA) or stroke.

Also included in the family of compounds of Formula I-H, I-HP, I-C,

- 20 I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP are the pharmaceutically-acceptable salts thereof. The term "pharmaceutically-acceptable salts" embraces salts commonly used to form alkali metal salts and to form addition salts of free acids or free bases. The nature of the salt is not critical, provided that it is pharmaceutically acceptable. Suitable pharmaceutically-acceptable acid addition  
25 salts of compounds of Formula I-H may be prepared from inorganic acid or from an organic acid. Examples of such inorganic acids are hydrochloric, hydrobromic, hydroiodic, nitric, carbonic, sulfuric and phosphoric acid. Appropriate organic acids may be selected from aliphatic, cycloaliphatic, aromatic, araliphatic, heterocyclic, carboxylic and sulfonic classes of organic  
30 acids, examples of which are formic, acetic, propionic, succinic, glycolic, gluconic, lactic, malic, tartaric, citric, ascorbic, glucoronic, maleic, fumaric, pyruvic, aspartic, glutamic, benzoic, anthranilic, mesylic, salicylic, p-hydroxybenzoic, phenylacetic, mandelic, embonic (pamoic), methanesulfonic, ethylsulfonic, benzenesulfonic, sulfanilic, stearic, cyclohexylaminosulfonic, algenic, galacturonic acid. Suitable pharmaceutically-acceptable base addition  
35 salts of compounds of Formula V-H include metallic salts made from aluminum, calcium, lithium, magnesium, potassium, sodium and zinc or

organic salts made from N,N'-dibenzylethylenediamine, choline, chloroprocaine, diethanolamine, ethylenediamine, meglumine (N-methylglucamine) and procain. All of these salts may be prepared by conventional means from the corresponding compound of Formula I-H by  
5 reacting, for example, the appropriate acid or base with the compound of Formula I-H.

Also embraced within this invention is a class of pharmaceutical compositions comprising the active compounds of Formula I-H in association with one or more non-toxic, pharmaceutically-acceptable carriers and/or  
10 diluents and/or adjuvants (collectively referred to herein as "carrier" materials) and, if desired, other active ingredients. The active compounds of the present invention may be administered by any suitable route, preferably in the form of a pharmaceutical composition adapted to such a route, and in a dose effective for the treatment intended. The active compounds and composition may, for  
15 example, be administered orally, intravascularly, intraperitoneally, subcutaneously, intramuscularly or topically.

For oral administration, the pharmaceutical composition may be in the form of, for example, a tablet, capsule, suspension or liquid. The pharmaceutical composition is preferably made in the form of a dosage unit  
20 containing a particular amount of the active ingredient. Examples of such dosage units are tablets or capsules. The active ingredient may also be administered by injection as a composition wherein, for example, saline, dextrose or water may be used as a suitable carrier.

The amount of therapeutically active compounds which are  
25 administered and the dosage regimen for treating a disease condition with the compounds and/or compositions of this invention depends on a variety of factors, including the age, weight, sex and medical condition of the subject, the severity of the disease, the route and frequency of administration, and the particular compound employed, and thus may vary widely.

30 The pharmaceutical compositions may contain active ingredients in the range of about 0.1 to 2000 mg, and preferably in the range of about 0.5 to 500 mg. A daily dose of about 0.01 to 100 mg/kg body weight, and preferably between about 0.5 and about 20 mg/kg body weight, may be appropriate. The daily dose can be administered in one to four doses per day.

35 The compounds may be formulated in topical ointment or cream, or as a suppository, containing the active ingredients in a total amount of, for example, 0.075 to 30% w/w, preferably 0.2 to 20% w/w and most preferably 0.4 to

15% w/w. When formulated in an ointment, the active ingredients may be employed with either paraffinic or a water-miscible ointment base.

Alternatively, the active ingredients may be formulated in a cream with an oil-in-water cream base. If desired, the aqueous phase of the cream base may

5 include, for example at least 30% w/w of a polyhydric alcohol such as propylene glycol, butane-1,3-diol, mannitol, sorbitol, glycerol, polyethylene glycol and mixtures thereof. The topical formulation may desirably include a compound which enhances absorption or penetration of the active ingredient through the skin or other affected areas. Examples of such dermal penetration

10 enhancers include dimethylsulfoxide and related analogs. The compounds of this invention can also be administered by a transdermal device. Preferably topical administration will be accomplished using a patch either of the reservoir and porous membrane type or of a solid matrix variety. In either case, the active agent is delivered continuously from the reservoir or microcapsules

15 through a membrane into the active agent permeable adhesive, which is in contact with the skin or mucosa of the recipient. If the active agent is absorbed through the skin, a controlled and predetermined flow of the active agent is administered to the recipient. In the case of microcapsules, the encapsulating agent may also function as the membrane.

20 The oily phase of the emulsions of this invention may be constituted from known ingredients in a known manner. While the phase may comprise merely an emulsifier, it may comprise a mixture of at least one emulsifier with a fat or an oil or with both a fat and an oil. Preferably, a hydrophilic emulsifier is included together with a lipophilic emulsifier which acts as a stabilizer. It is  
25 also preferred to include both an oil and a fat. Together, the emulsifier(s) with or without stabilizer(s) make-up the so-called emulsifying wax, and the wax together with the oil and fat make up the so-called emulsifying ointment base which forms the oily dispersed phase of the cream formulations. Emulsifiers and emulsion stabilizers suitable for use in the formulation of the present  
30 invention include Tween 60, Span 80, cetostearyl alcohol, myristyl alcohol, glyceryl monostearate, and sodium lauryl sulfate, among others.

The choice of suitable oils or fats for the formulation is based on achieving the desired cosmetic properties, since the solubility of the active compound in most oils likely to be used in pharmaceutical emulsion  
35 formulations is very low. Thus, the cream should preferably be a non-greasy, non-staining and washable product with suitable consistency to avoid leakage from tubes or other containers. Straight or branched chain, mono- or dibasic

alkyl esters such as di-isoadipate, isocetyl stearate, propylene glycol diester of coconut fatty acids, isopropyl myristate, decyl oleate, isopropyl palmitate,

butyl stearate, 2-ethylhexyl palmitate or a blend of branched chain esters may be used. These may be used alone or in combination depending on the

- 5 properties required. Alternatively, high melting point lipids such as white soft paraffin and/or liquid paraffin or other mineral oils can be used.

For therapeutic purposes, the active compounds of this combination invention are ordinarily combined with one or more adjuvants appropriate to the indicated route of administration. If administered *per os*, the compounds

- 10 may be admixed with lactose, sucrose, starch powder, cellulose esters of alkanoic acids, cellulose alkyl esters, talc, stearic acid, magnesium stearate, magnesium oxide, sodium and calcium salts of phosphoric and sulfuric acids, gelatin, acacia gum, sodium alginate, polyvinylpyrrolidone, and/or polyvinyl alcohol, and then tableted or encapsulated for convenient administration. Such

- 15 capsules or tablets may contain a controlled-release formulation as may be provided in a dispersion of active compound in hydroxypropylmethyl cellulose. Formulations for parenteral administration may be in the form of aqueous or non-aqueous isotonic sterile injection solutions or suspensions. These solutions and suspensions may be prepared from sterile powders or

- 20 granules having one or more of the carriers or diluents mentioned for use in the formulations for oral administration. The compounds may be dissolved in water, polyethylene glycol, propylene glycol, ethanol, corn oil, cottonseed oil, peanut oil, sesame oil, benzyl alcohol, sodium chloride, and/or various buffers. Other adjuvants and modes of administration are well and widely

- 25 known in the pharmaceutical art.

The present invention further comprises a process for the preparation of (R)-chiral compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP by reacting suitable secondary amines with (R)-chiral forms of alcohols, epoxides, and cyclic sulfate esters.

30 The present invention also comprises a process for the preparation of (R)-chiral compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP by reacting a suitable secondary amine with a substantially stoichiometric amount of a (R)-chiral epoxide in the presence of a transition metal-based salt.

35 The present invention also comprises a process for the preparation of (R)-chiral precursor compounds useful in the preparation of compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-

CP by reacting a suitable primary amine with a substantially stoichiometric amount of a (R)-chiral epoxide with or without the presence of an added transition metal-based compound.

All mentioned references are incorporated by reference as if here written.

5 Although this invention has been described with respect to specific embodiments, the details of these embodiments are not to be construed as limitations.

10

## GENERAL SYNTHETIC PROCEDURES

The compounds of the present invention can be synthesized, for example, according to the following procedures of Schemes 1 through 15 below, wherein the substituents are as defined for Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP above except where further noted.

Synthetic Scheme 1 shows the preparation of compounds of formula XIII A-H ("Secondary Heteroaryl Amines") which are intermediates in the preparation of the compounds of the present invention corresponding to 20 Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral 25 Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") wherein A and Q are independently aryl and heteroaryl. Schemes 1 through 3, taken together, prepare 1-substitutedamino-2-alkanols of the present invention by addition of a halogenated, oxygen containing precursor to a secondary 30 amine to introduce an oxy containing alkyl group wherein the two groups making up the secondary amine both are made up of aromatic groups or both groups contain aromatic rings wherein said aromatic rings maybe 0 to 2 aryl rings and 0 to 2 heteroaryl rings.

The "Generic Imine" corresponding to Formula XII can be prepared 35 through dehydration techniques generally known in or adaptable from the art by reacting "Generic Amine-I" of Formula X with the "Generic Carbonyl

Compound" of Formula XI in Scheme 1 and subsequent specific examples. For example, when Z is a covalent bond, methylene, methine substituted with another substituent, ethylene, or another substituent as defined in Formula I-H, the two reactants (X and XI) react by refluxing them in an aprotic solvent, such 5 as hexane, toluene, cyclohexane, benzene, and the like, using a Dean-Stark type trap to remove water. After about 2-8 hours or until the removal of water is complete, the aprotic solvent is removed *in vacuo* to yield the "Generic Imine" of Formula XII. Alternately, when Z is an oxygen, the "Generic Imine" is an oxime derivative. Alternately, when Z is a nitrogen, the "Generic Imine" 10 is a hydrazone derivative. Hydrazone type "Generic Imine" compounds are readily prepared from the corresponding hydrazine and the appropriate aldehyde or ketone type "Generic Carbonyl Compound". Suitable procedures for forming oxime and hydrazone imines are also described by Shriner, Fuson, and Curtin in The Systematic Identification of Organic Compounds, 5th 15 Edition, John Wiley & Sons, and by Fieser and Fieser in Reagents for Organic Synthesis, Volume 1, John Wiley & Sons, which are incorporated herein by reference.

The "Generic Secondary Amines" of Formula XIII can be prepared from the corresponding "Generic Imine" of Formula XII in several ways. For 20 example, in one synthetic scheme (Reduction Method-1), which is preferred when Z is a nitrogen, the "Generic Imine" hydrazone of Formula XII is partially or completely dissolved in lower alkanols containing sufficient organic acid or mineral acid as described in WO Patent Application No.9738973, Swiss Patent CH 441366 and U. S. Patent Nos. 3359316 and 3334017, which 25 are incorporated herein by reference, and then hydrogenated at 0-100°C, more preferably 20-50°C, and most preferably between 20-30°C and pressures of 10-200 psi hydrogen or more preferably between 50-70 psi hydrogen in the presence of a noble metal catalyst such as PtO<sub>2</sub>.

In another synthetic scheme (Reduction Method-2), which is preferred 30 when Z is a single bond or carbon, the "Generic Imine" of Formula XII is slurred in a lower alcohol such as ethanol, methanol or like solvent at 0-10°C and solid sodium borohydride is added in batches over 5-10 minutes at 0-10°C with stirring. The reaction mixture is stirred below 10°C for 30-90 minutes

and then is warmed gradually to 15-30°C. After about 1-10 hours, the mixture is cooled and acid is added until the aqueous layer was just acidic (pH 5-7).

- In yet another synthetic scheme (Reduction Method-3), which is preferred when Z is an oxygen, the "Generic Imine" oxime of Formula XII is
- 5 slurred in a lower alcohol solvent such methanol or like solvent at 0-10°C and acidified to a pH less than 4. Solid sodium cyanoborohydride is added in batches over 30-90 minutes at 0-20°C with stirring and addition of a suitable organic or mineral acid to keep the pH at or below 4. The reaction mixture is stirred and warmed gradually to about 20-25°C. After about 1-10 hours, the
- 10 mixture is cooled and base added until the mixture was just slightly alkaline.

The "Generic Secondary Amines" of Formula XIII can also be prepared, according to Scheme 1 by an alkylation procedures based on the nucleophilic substitution of bromides by amines. In one synthetic alkylation scheme (Alkylation Method-1), a "Generic Amine-1" of Formula X is reacted

15 with a "Generic Bromide-2" of Formula XXIII as described in Vogel's Textbook of Practical Organic Chemistry, Fifth Edition, 1989, pages 902 to 905 and references cited therein all of which are incorporated herein by reference. In an alternate synthetic alkylation scheme (Alkylation Method-2), a "Generic Amine-2" of Formula XXII is reacted with a "Generic Bromide-2" of

20 Formula XXIII in a method employing palladium catalyzed carbon-nitrogen bond formation. Suitable procedures for this conversion are described in Wagaw and Buchwald, J. Org. Chem. (1996), 61, 7240-7241, Wolfe, Wagaw and Buchwald, J. Am. Chem. Soc. (1996), 118, 7215-7216, and Wolfe and Buchwald, Tetrahedron Letters (1997), 38(36), 6359-6362 and references

25 cited therein all of which are incorporated herein by reference. The preferred "Generic Bromide-2" of Formula XXIII are generally aryl bromides, aryl triflates, and heteroaryl bromides.

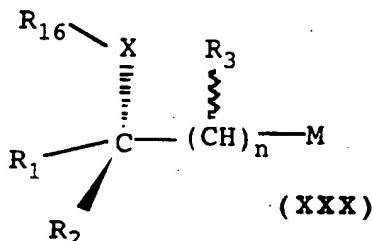
The "Generic Amine-1" and "Generic Amine-2" amines, hydroxylamines, and hydrazines, the "Generic Carbonyl Compound"

30 aldehydes, ketones, hydrazone, and oximes, and "Generic Bromide-1" and "Generic Bromide-2" halides, tosylates, mesylates, triflates, and precursor alcohols required to prepare the "Generic Secondary Amine" compounds are available from commercial sources or can be prepared by one skilled in the art from published procedures. Commercial sources include but are not limited to

35 Aldrich Chemical, TCI-America, Lancaster-Synthesis, Oakwood Products,

- Acros Organics, and Maybridge Chemical. Disclosed procedures for "Generic Amine" amines, hydroxylamines, and hydrazines include Sheradsky and Nov. J. Chem. Soc., Perkin Trans. I (1980), (12), 2781-6; Marcoux, Doye, and Buchwald, J. Am. Chem. Soc. (1997), 119, 1053-9; Sternbach and Jamison, 5 Tetrahedron Lett. (1981), 22(35), 3331-4; U. S. Patent No. 5306718; EP No. 314435; WO No. 9001874; WO No. 9002113; JP No. 05320117; WO No. 9738973; Swiss Patent No. CH 441366; U. S. Patents Nos. 3359316 and 3334017; and references cited therein which are incorporated herein by reference.
- 10 Synthetic Scheme 2 shows the preparation of the class of compounds of the present invention corresponding to Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic 15 Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") wherein A and Q are independently aryl and heteroaryl.
- 20 Derivatives of "Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols", "Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols", "Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols", "Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols", and "Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols", in which the hetero atom (-O-) is attached to an alkyl group removed from the amine by two or more carbons are readily prepared by anion chemistry using the method of Scheme 2. The anion of 25 "Generic Secondary Amine" amines, hydroxylamines, and hydrazines of Formula XIII is readily formed by dissolving the specific amine, hydroxylamine, or hydrazine in an aprotic solvent, such as tetrahydrofuran, toluene, ether, dimethylformamide, and dimethylformamide, under anhydrous conditions. The solution is cooled to a temperature between -78 and 0°C, preferably between -78 and -60°C, and the anion formed by the addition of at 30 least one equivalent of a strong, aprotic, non-nucleophilic base, such as NaH or n-butyllithium under an inert atmosphere, for each acidic group present.
- 35

Maintaining the temperature between -78 and 0°C, preferably between -78 and -60°C, with suitable cooling, an appropriate alkyl halide, alkyl benzenesulfonate such as a alkyl tosylate, alkyl mesylate, alkyl triflate or similar alkylating reagent of the general structure:



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- where M is a readily displaceable group such as chloride, bromide, iodide, tosylate, triflate, and mesylate and X is oxy. After allowing the reaction mixture to warm to room temperature, the reaction product is added to water, neutralized if necessary, and extracted with a water-immiscible solvent such as diethyl ether or methylene chloride. The combined aprotic solvent extract is washed with saturated brine, dried over drying agent such as anhydrous MgSO<sub>4</sub> and concentrated *in vacuo* to yield crude Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"). This material is purified, for example, by eluting through silica gel with a medium polar solvent such as ethyl acetate in a non-polar solvent such as hexanes to yield Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"). Products are structurally confirmed by low and high resolution mass spectrometry and NMR.
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- 15
- 20
- 25
- 30

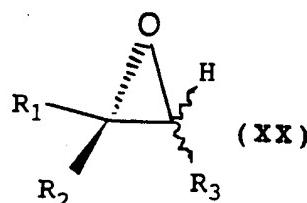
Compounds of Formula (XXX), which can be used to prepare the "Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanol" compounds of Tables 3 and 4, are given in Table 2. Reagents 1a and 2a in Table 2 are prepared from the corresponding alcohols. (R)-Chiral alcohol precursors to 1a, 2a, and similar alcohols that can be envisioned by one of inventive skill can be obtained from the corresponding racemic mixture of the R-enantiomer and S-enantiomer by separation procedures using preparative gas chromatography and high pressure liquid chromatography using chiral chromatographic columns. The tosylates of chiral alcohols and racemic mixtures are readily obtained by reacting the corresponding alcohol with tosyl chloride using procedures found in House's Modern Synthetic Reactions, Chapter 7, W. A. Benjamin, Inc., Shriner, Fuson, and Curtin in The Systematic Identification of Organic Compounds, 5th Edition; John Wiley & Sons. and Fieser and Fieser in Reagents for Organic Synthesis, Volume 1, John Wiley & Sons, which are incorporated herein by reference.

Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds can also be prepared using the method of Scheme 2 through the use of racemic (XXX) as described followed by preparative separation of the R-enantiomer from the S-enantiomer using chiral chromatographic procedures such as preparative gas chromatography and high pressure liquid chromatography using readily available chiral chromatographic columns and procedures.

A preferred procedure for Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds is the novel inventive Method A of Scheme 3. (R)-Chiral oxirane reagents useful in Method A are exemplified, but not limited to those in Table 1. Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl

(R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds are prepared by reacting "Generic Secondary Amine" amines, hydroxylamines, and hydrazines of Formula XIII with (R)-chiral oxiranes of

- 5 the type listed in Table 1 and represented by the general structure:



Oxiranes having a specific stereochemical arrangement of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> can be prepared using chiral procedures such as those published in 1995 by

- 10 Ramachandran, Gong, and Brown in the Journal of Organic Chemistry, Vol. 60, pages 41 to 46; cited references also detail alternate procedures to prepare chiral and achiral epoxides, which are incorporated herein by reference. For example, the specific preparation of R-(+)-1,1,1-trifluoro-2,3-epoxypropane.



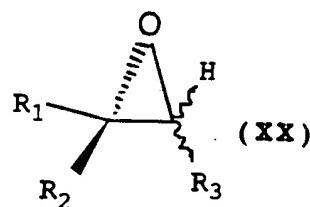
- 15 using a procedure adopted from H.C.Brown et al. (*J. Org. Chem.* **60**, 41-46, (1995)), is accomplished as described in Example 4. Many of the epoxides summarized in Table 1 can be prepared in the (R)-configuration using procedures analogous to that given above for R-(+)-1,1,1-trifluoro-2,3-epoxypropane.

- In some cases, achiral oxiranes of (XX) can be prepared from the corresponding alkenes by reaction of epoxidation reagents such as meta-20 chloroperbenzoic acid (MCPBA) and similar type reagents readily selectable by a person of skill-in-the-art with alkenes. Fieser and Fieser in *Reagents for Organic Synthesis*, John Wiley & Sons provides, along with cited references, numerous suitable epoxidation reagents and reaction conditions, which are incorporated herein by reference. These achiral oxiranes can be reacted in an identical manner to that described for (R)-chiral oxiranes with "Generic 25 Secondary Amine" amines, hydroxylamines, and hydrazines of Formula XIII to afford racemic compounds structurally identical to those of Formula I-HP, Formula I-HPC, and Formula I-C but with the corresponding (S) chiral configuration present in an equivalent amount. Formula I-HP ("Generic

Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"). Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols")

- 5 compounds can be obtained by preparative chiral chromatography of said racemic mixtures to obtain the (R)-chiral configuration of Formula I-HP, Formula I-HPC, and Formula I-CP substantially free of the (S)-chiral configuration enantiomer. Alternatively, achiral oxiranes may be separated by chiral preparative chromatography into their respective (R)-Chiral and (S)-
- 10 Chiral enantiomers and the (R)-Chiral enantiomer reacted to afford Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"). Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols")
- 15 compounds.

Table 1. Structure of (R)-Chiral Oxirane Reagents.

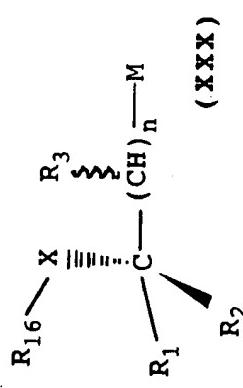


<u>Reagent Number</u>	<u>R<sub>1</sub></u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>
1	CF <sub>3</sub>	H	H
2	CCl <sub>3</sub>	H	H
3	CF <sub>3</sub>	CH <sub>3</sub>	H
4	CF <sub>3</sub> CF <sub>2</sub>	H	H
5	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub>	H	H
6	CF <sub>3</sub> OCF <sub>2</sub> CF <sub>2</sub>	H	H
7	CF <sub>3</sub> CH <sub>2</sub>	H	H
9	CF <sub>3</sub>	H	CF <sub>3</sub>
11	CF <sub>3</sub>	C <sub>6</sub> H <sub>5</sub>	H
12	CCl <sub>3</sub>	C <sub>6</sub> H <sub>5</sub>	H
13	CCl <sub>3</sub>	Cyclopropyl	H
14	CCl <sub>3</sub>	CH <sub>3</sub>	H
15	CCl <sub>3</sub>	(CH <sub>3</sub> ) <sub>2</sub> CH	H
16	CHCl <sub>2</sub>	H	H
18	CF <sub>3</sub>	H	CH <sub>3</sub>
27	CCl <sub>3</sub> CH <sub>2</sub>	H	H
28	CBr <sub>3</sub> CH <sub>2</sub>	H	H
29	CHBr <sub>2</sub> CH <sub>2</sub>	H	H
30	CBrCl <sub>2</sub>	H	H
31	CClF <sub>2</sub>	H	H
32	CCl <sub>2</sub> F	H	H

Table 1. (continued) Structure of (R)-Chiral Oxirane Reagents.

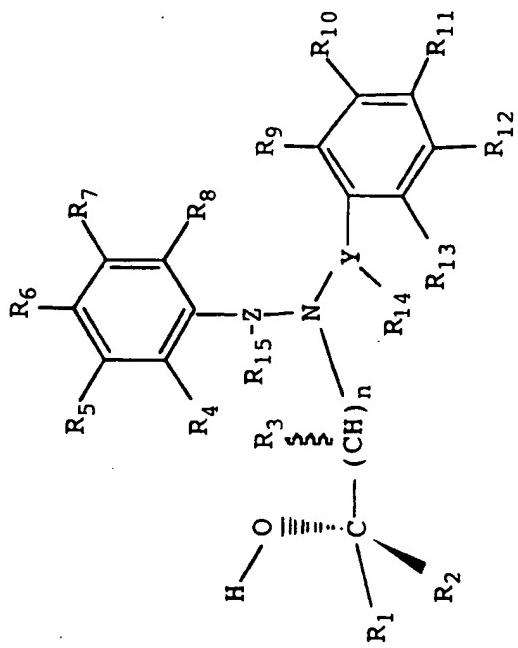
<u>Reagent Number</u>	<u>R<sub>1</sub></u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>
33	CCl <sub>3</sub> CCl <sub>2</sub>	H	H
43	FCH <sub>2</sub>	H	H
56	CBrF <sub>2</sub> CClFCH <sub>2</sub>	H	H
57	HCF <sub>2</sub> CF <sub>2</sub> OCH <sub>2</sub>	H	H

Table 2. Structure and Source of Alcohol and Glycol Reagents.



<u>Reagent Number</u>	<u>R<sub>1</sub></u>	<u>M</u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>X-R<sub>16</sub></u>	<u>Source of Reagent</u>
1A	CF <sub>3</sub>	3 OTs	H	H	OH	Chiral separation and then tosylation of alcohol from Justus Liebigs Ann. Chem. (1969), 720, 81-97.
2A	CF <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub>	3 OTs	H	H	OH	Chiral separation and then tosylation of alcohol from Z. Naturforsch., B: Chem. Sci. (1997), 52 (3), 413-418

Table 3. Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
(Y is CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> are each H; Z is covalent bond and R<sub>15</sub> is absent).



<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent									
1A	1N	CF <sub>3</sub>	3	H	H	C <sub>6</sub> H <sub>5</sub> O	H	H	OCF <sub>2</sub> CF <sub>2</sub> H	H
1A	2N	CF <sub>3</sub>	3	H	H	OCF <sub>3</sub>	H	H	OCF <sub>2</sub> CF <sub>2</sub> H	H

Table 3. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
 (Y is CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> are each H; Z is covalent bond and R<sub>15</sub> is absent).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent									
IA	3N	CF <sub>3</sub>	3	H	F	H	H	F	OCF <sub>2</sub> CF <sub>2</sub> H	H
IA	4N	CF <sub>3</sub>	3	H	H	F	H	H	OCF <sub>2</sub> CF <sub>2</sub> H	H
IA	5N	CF <sub>3</sub>	3	H	H	C <sub>6</sub> H <sub>5</sub> O	H	H	OCF <sub>3</sub>	H
IA	6N	CF <sub>3</sub>	3	H	H	OCF <sub>3</sub>	H	H	OCF <sub>3</sub>	H
IA	7N	CF <sub>3</sub>	3	H	H	H	H	H	OCF <sub>3</sub>	H
IA	8N	CF <sub>3</sub>	3	H	H	phenyl	H	H	OCF <sub>3</sub>	H
IA	9N	CF <sub>3</sub>	3	H	H	H	H	H	OCF <sub>3</sub>	H
IA	10N	CF <sub>3</sub>	3	H	H	Br	H	H	OCF <sub>3</sub>	H
IA	11N	CF <sub>3</sub>	3	H	H	CF <sub>3</sub>	F	H	CF <sub>3</sub>	H
IA	12N	CF <sub>3</sub>	3	H	H	CH <sub>3</sub>	H	H	CF <sub>3</sub>	H
IA	13N	CF <sub>3</sub>	3	H	H	CF <sub>3</sub>	H	H	CF <sub>3</sub>	H
IA	14N	CF <sub>3</sub>	3	H	H	CH <sub>3</sub>	H	H	OCF <sub>3</sub>	H

Table 3. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
 (Y is CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> are each H; Z is covalent bond and R<sub>15</sub> is absent).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>R<sub>11</sub></u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent										
IA	15N	CF <sub>3</sub>	3	H	H		F		H		
IA	16N	CF <sub>3</sub>	3	H	H	Br	H	H	OCF <sub>3</sub>	H	
IA	17N	CF <sub>3</sub>	3	H	H	CF <sub>3</sub>	F	H	OCF <sub>3</sub>	H	
IA	18N	CF <sub>3</sub>	3	H	H	F	H	H	OCF <sub>3</sub>	H	
IA	19N	CF <sub>3</sub>	3	H	H	Cl	H	H	OCF <sub>3</sub>	H	
IA	20N	CF <sub>3</sub>	3	H	H	F	H	H	OCF <sub>3</sub>	H	
IA	21N	CF <sub>3</sub>	3	H	H	F	F	H	OCF <sub>3</sub>	H	
IA	22N	CF <sub>3</sub>	3	H	H	Cl	H	H	CF <sub>3</sub>	H	
IA	23N	CF <sub>3</sub>	3	H	H	F	H	H	CF <sub>3</sub>	H	
IA	24N	CF <sub>3</sub>	3	H	H	CF <sub>3</sub>	Cl	H	CF <sub>3</sub>	H	
IA	25N	CF <sub>3</sub>	3	H	H	CF <sub>3</sub>	F	H	phenoxy	H	
IA	26N	CF <sub>3</sub>	3	H	H	H	H	H	CF <sub>3</sub>	H	

Table 3. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
(Y is CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> are each H; Z is covalent bond and R<sub>15</sub> is absent).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>R<sub>11</sub></u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent										
IA	27N	CF <sub>3</sub>	3	H	H	F	F	H	H		
IA	28N	CF <sub>3</sub>	3	H	H	H	H	OCH <sub>3</sub>	H	CF <sub>3</sub>	H
IA	29N	CF <sub>3</sub>	3	H	H	H	F	F	H	CF <sub>3</sub>	H
IA	30N	CF <sub>3</sub>	3	H	H	H	OCH <sub>3</sub>	H	H	CH <sub>3</sub>	H
IA	31N	CF <sub>3</sub>	3	H	H	H	H	H	H	CH <sub>3</sub>	H
IA	32N	CF <sub>3</sub>	3	H	H	H	H	CH <sub>3</sub>	H	H	H
IA	33N	CF <sub>3</sub>	3	H	H	H	Cl	H	H	H	H
IA	34N	CF <sub>3</sub>	3	H	H	H	F	H	H	F	H
IA	35N	CF <sub>3</sub>	3	H	H	H	H	OCH <sub>3</sub>	H	CH <sub>3</sub>	H
IA	36N	CF <sub>3</sub>	3	H	H	H	H	H	H	H	H
IA	37N	CF <sub>3</sub>	3	H	H	H	H	CH <sub>3</sub>	H	CH <sub>3</sub>	H
IA	38N	CF <sub>3</sub>	3	H	H	H	F	H	H	H	3-CF <sub>3</sub> -H

Table 3. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
(Y is CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> are each H; Z is covalent bond and R<sub>15</sub> is absent).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>Y</u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent										
IA	39N	CF <sub>3</sub>	3	H	H						
IA	40N	CF <sub>3</sub>	3	H	H	F	H	H			
IA	41N	CF <sub>3</sub>	3	H	H	F	H	H			
IA	42N	CF <sub>3</sub>	3	H	H	F	H	H			
IA	43N	CF <sub>3</sub>	3	H	H	F	H	H	H		
IA	44N	CF <sub>3</sub>	3	H	H	F	H	H	CH <sub>3</sub>		
IA	45N	CF <sub>3</sub>	3	H	H	Cl	H	H	CH <sub>3</sub>		
IA	46N	CF <sub>3</sub>	3	H	H	CH <sub>3</sub>	H	H	CH <sub>3</sub>	H	
IA	48N	CF <sub>3</sub>	3	H	H	H	CH <sub>3</sub>	H	CF <sub>3</sub>	H	
IA	51N	CF <sub>3</sub>	3	H	H	H	CH <sub>3</sub>	H	F	H	

Table 3. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
(Y is CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> are each H; Z is covalent bond and R<sub>15</sub> is absent).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent									
IA	52N	CF <sub>3</sub>	3	H	H	CF <sub>3</sub>	H	H	F	H
IA	53N	CF <sub>3</sub>	3	H	H	CF <sub>3</sub>	H	H	CH <sub>3</sub>	H
IA	54N	CF <sub>3</sub>	3	H	H	OCH <sub>3</sub>	H	H	CF <sub>3</sub>	H
IA	56N	CF <sub>3</sub>	3	H	H	H	H	CF <sub>3</sub>		
IA	57N	CF <sub>3</sub>	3	H	H	C <sub>6</sub> H <sub>5</sub> O	H	H	CF <sub>3</sub>	H
IA	58N	CF <sub>3</sub>	3	H	H	H	H	H		
IA	59N	CF <sub>3</sub>	3	H	H	OCF <sub>3</sub>	H	H		OCF <sub>3</sub>
IA	60N	CF <sub>3</sub>	3	H	H	CF <sub>3</sub>	F	H	H	OCF <sub>3</sub>
IA	61N	CF <sub>3</sub>	3	H	H	H	H	H		CF <sub>3</sub>
IA	62N	CF <sub>3</sub>	3	H	H	OCH <sub>3</sub>	H	H		CF <sub>3</sub>
IA	63N	CF <sub>3</sub>	3	H	H	CH <sub>3</sub>	H	H		CF <sub>3</sub>
IA	64N	CF <sub>3</sub>	3	H	H	Cl	H	H		CF <sub>3</sub>
						CF <sub>3</sub>	H	H		OCF <sub>3</sub>

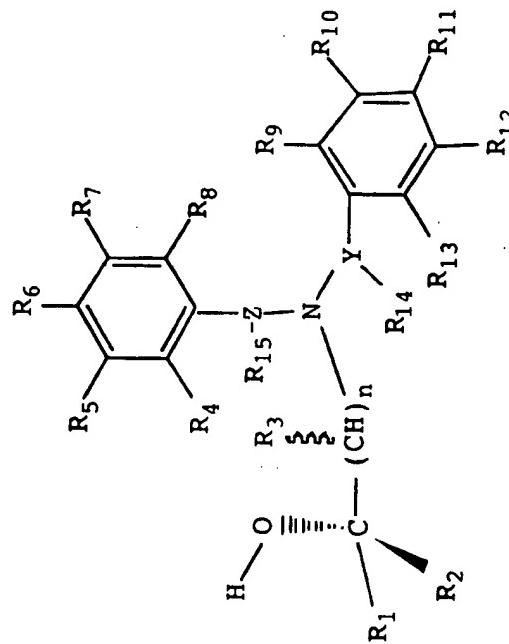
Table 3. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
(Y is CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> are each H; Z is covalent bond and R<sub>15</sub> is absent).

<u>Inhibitor Number</u>	<u>Column1+Column 2</u>	<u>R<sub>1</sub></u>	<u>Y</u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent										
IA	65N	CF <sub>3</sub>	3	H	H	F	H	H	H		
IA	66N	CF <sub>3</sub>	3	H	H	F	H	F	H	OCF <sub>3</sub>	
IA	67N	CF <sub>3</sub>	3	H	H	Br	H	H	H	OCF <sub>3</sub>	
IA	68N	CF <sub>3</sub>	3	H	H	Cl	H	H	H	OCF <sub>3</sub>	
IA	69N	CF <sub>3</sub>	3	H	H	F	F	H	H	OCF <sub>3</sub>	
IA	70N	CF <sub>3</sub>	3	H	H	F	H	H	H	OCF <sub>3</sub>	
IA	71N	CF <sub>3</sub>	3	H	H	CH <sub>3</sub>	H	H	H	phenyl	
IA	72N	CF <sub>3</sub>	3	H	H	F	F	H	H	OCF <sub>3</sub>	
IA	73N	CF <sub>3</sub>	3	H	H	Cl	H	H	H	CF <sub>3</sub>	
IA	74N	CF <sub>3</sub>	3	H	H	OCH <sub>3</sub>	H	H	H	CH <sub>3</sub>	
IA	75N	CF <sub>3</sub>	3	H	H	F	H	H	H	CH <sub>3</sub>	
IA	76N	CF <sub>3</sub>	3	H	H	F	F	H	H	CH <sub>3</sub>	OCF <sub>3</sub>

Table 3. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
 (Y is CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> are each H; Z is covalent bond and R<sub>15</sub> is absent).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>R<sub>11</sub></u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent										
IA	78N	CF <sub>3</sub>	3	H	H	H					
IA	79N	CF <sub>3</sub>	3	H	H	H	OCH <sub>3</sub>	H	H		CH <sub>3</sub>
IA	80N	CF <sub>3</sub>	3	H	H	H	CH <sub>3</sub>	H	H		CH <sub>3</sub>
IA	82N	CF <sub>3</sub>	3	H	H	H	CH <sub>3</sub>	H	H		CH <sub>3</sub>
IA	83N	CF <sub>3</sub>	3	H	H	F	F	H	H		CH <sub>3</sub>
IA	84N	CF <sub>3</sub>	3	H	H	F	H	F	H		CH <sub>3</sub>
IA	85N	CF <sub>3</sub>	3	H	H	F	CF <sub>3</sub>	H	H		CH <sub>3</sub>
IA	86N	CF <sub>3</sub>	3	H	H	H	CF <sub>3</sub>	H	H		CH <sub>3</sub>
IA	88N	CF <sub>3</sub>	3	H	H	H	CH <sub>3</sub>	H	H		CF <sub>3</sub>
IA	90N	CF <sub>3</sub>	3	H	H	H	CF <sub>3</sub>	H	H		CH <sub>3</sub>
IA	92N	CF <sub>3</sub>	3	H	H	H	CF <sub>3</sub>	H	H		CH <sub>3</sub>

**Table 4.** Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
(Y and Z are each CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, R<sub>14</sub> and R<sub>15</sub> are each H).



<u>Inhibitor Number</u>		<u>R<sub>1</sub></u>	<u>n</u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>9</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
<u>Column 1+Column 2</u>	<u>Reagent</u>										
I A	IDB	CF <sub>3</sub>	3	H	H	H	OCF <sub>3</sub>	H	H	OCF <sub>3</sub>	H

Table 4. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
 (Y and Z are each CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, R<sub>14</sub> and R<sub>15</sub> are each H).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>Y</u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>9</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent										
IA	2DB	CF <sub>3</sub>	3	H	H	Cl	H	H	H		CF <sub>3</sub>
IA	3DB	CF <sub>3</sub>	3	H	H	Br	H	H	OCF <sub>3</sub>	H	
IA	4DB	CF <sub>3</sub>	3	H	H	Cl	H	H	OCF <sub>3</sub>	H	
IA	5DB	CF <sub>3</sub>	3	H	H	Cl	H	H	OCF <sub>3</sub>	H	
IA	6DB	CF <sub>3</sub>	3	H	H	Cl	H	H	CF <sub>3</sub>	H	
IA	7DB	CF <sub>3</sub>	3	H	H	F	H	H	CF <sub>3</sub>	H	
IA	8DB	CF <sub>3</sub>	3	H	H	Cl	H	H	CF <sub>3</sub>	H	
IA	9DB	CF <sub>3</sub>	3	H	H	F	H	H	OCF <sub>3</sub>	H	
IA	10DB	CF <sub>3</sub>	3	H	H	Cl	H	H	H	CF <sub>3</sub>	
IA	11DB	CF <sub>3</sub>	3	H	H	F	H	H	H	CF <sub>3</sub>	
IA	12DB	CF <sub>3</sub>	3	H	H	Cl	H	CF <sub>3</sub>	H	CF <sub>3</sub>	H

Table 4. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
 (Y and Z are each CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, R<sub>14</sub> and R<sub>15</sub> are each H).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>■</u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>9</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent										
IA	13DB	CF <sub>3</sub>	3	H	H	H	Cl	CF <sub>3</sub>	H	H	H
IA	14DB	CF <sub>3</sub>	3	H	H	Cl	H	CF <sub>3</sub>	H	H	H
IA	15DB	CF <sub>3</sub>	3	H	H	F	H	CH <sub>3</sub>	H	H	H
IA	16DB	CF <sub>3</sub>	3	H	H	H	F	H	H	CH <sub>3</sub>	H
IA	17DB	CF <sub>3</sub>	3	H	H	F	H	H	H	CH <sub>3</sub>	H
IA	18DB	CF <sub>3</sub>	3	H	H	F	H	H	CH <sub>3</sub>	H	H
IA	19DB	CF <sub>3</sub>	3	H	H	H	F	CH <sub>3</sub>	H	H	H
IA	20DB	CF <sub>3</sub>	3	H	H	F	H	H	CH <sub>3</sub>	H	H
IA	21DB	CF <sub>3</sub>	3	H	H	F	H	H	H	CH <sub>3</sub>	H
IA	22DB	CF <sub>3</sub>	3	H	H	Cl	H	H	H	CF <sub>3</sub>	H
IA	23DB	CF <sub>3</sub>	3	H	H	F	H	CF <sub>3</sub>	H	H	H

Table 4. (continued) Structure of Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols  
 (Y and Z are each CH; R<sub>8</sub>, R<sub>9</sub>, R<sub>12</sub>, R<sub>13</sub>, R<sub>14</sub> and R<sub>15</sub> are each H).

<u>Inhibitor Number</u>	<u>Column 1+Column 2</u>	<u>R<sub>1</sub></u>	<u>Y</u>	<u>R<sub>2</sub></u>	<u>R<sub>3</sub></u>	<u>R<sub>4</sub></u>	<u>R<sub>5</sub></u>	<u>R<sub>6</sub></u>	<u>R<sub>9</sub></u>	<u>R<sub>10</sub></u>	<u>R<sub>11</sub></u>
Reagent	Reagent										
IA	24DB	CF <sub>3</sub>	3	H	H	H	F	CF <sub>3</sub>	H	H	
IA	25DB	CF <sub>3</sub>	3	H	H	F	H				
IA	26DB	CF <sub>3</sub>	3	H	H	H	H	CF <sub>3</sub>	H		
IA	27DB	CF <sub>3</sub>	3	H	H	H	F	H	CF <sub>3</sub>	H	

- A mixture of a "Generic Secondary Amine" amine, hydroxylamine, or hydrazine of Formula XIII and an excess of a halogenated oxirane of (R)-chiral configuration of Formula XX are stirred and heated to 40-90°C for 5 to 48 hours in a tightly capped or contained reaction vessel. More preferably, a
- 5 Lewis acid such as a transition metal-based salts (for example, ytterbium triflate, hafnium triflate, scandium triflate, neodymium triflate, gadolinium triflate, and zirconium triflate) in methylene chloride, tetrahydrofuran, or, more preferably, acetonitrile is added to speed up the reaction to a total time of 4 to 18 hours, improve yields, to permit the reaction temperature to be reduced to
- 10 15-65°C. and to use a smaller excess of halogenated oxirane. When a Lewis acid is used, the reaction should be carried out under inert, anhydrous conditions using a blanket of dry nitrogen or argon gas. After cooling to room temperature and testing the reaction mixture for complete reaction by thin layer chromatography or high pressure liquid chromatography (hplc), the reaction
- 15 product is added to water and extracted with a water immiscible solvent such as diethyl ether or methylene chloride. (Note: If the above analysis indicates that reaction is incomplete, heating should be resumed until complete with the optional addition of more of the oxirane). The combined aprotic solvent extract is washed with saturated brine, dried over drying agent such as anhydrous
- 20  $MgSO_4$  and concentrated *in vacuo* to yield crude Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), and Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds.
- 25 This material is purified by eluting through silica gel with 5-40% of a medium polar solvent such as ethyl acetate in a non-polar solvent such as hexanes to yield Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"),
- 30 and Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds. Products are tested for purity by HPLC. If necessary, the Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-
- 35 Substitutedamino-2-Propanols"), and Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds are purified

- by additional chromatography or recrystallization. Products are structurally confirmed by low and high resolution mass spectrometry and NMR. Examples of specific Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), and Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds prepared are summarized in the Examples 1 through 44, and Example Tables 1 through 12.
- Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), and Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds can further be prepared in an alternate manner to procedures disclosed above and in Schemes 1, 2, and 3. Schemes 9 and 10 detail such procedures to prepare aminopropanol compounds of the present invention by initial formation of an halogenated, oxygen containing primary alkylamine XVL ("Generic Substituted Alkylamine"). Said halogenated, oxygen containing primary alkylamine XVL, formed in Scheme 9, is itself converted to secondary amines, VLX-H ("Heteroaryl Alkyl Amine) and VLX ("Phenyl Alkyl Amine"), using procedures disclosed above. Primary alkylamine XVL is first reacted with an aldehydic or ketonic carbonyl compound, XI-AH ("Heteroaryl Carbonyl") with azeotropic distillation to form imine, VL-H ("Heteroaryl Imine"). Said imine VL-H is then reduced with or without prior isolation by Reduction Methods 1, 2 or 3 as disclosed above and in Scheme 1 to yield secondary amine, VLX-H ("Heteroaryl Alkyl Amine). Said secondary amine VLX-H can be converted according to Scheme 10 to give Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols") and Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") and Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds. Using similar Schemes, VLX can be converted to Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds. Compounds of this invention in which one aromatic substituent is aryl and the other aromatic substituent is heteroaryl can be readily prepared by reacting VLX-H with an aralkyl bromide or aryl bromide instead of using an heteroaralkyl bromide or heteroaryl bromide. Similarly, compounds of this

invention in which one aromatic substituent is aryl and the other aromatic substituent is heteroaryl can be readily prepared by reacting VLX with an heteroaryl bromide or heteroaralkyl bromide instead of using an aryl bromide or an aralkyl bromide.

- 5        Formula I-HP (“Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols”), Formula I-HPC (“Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”), and Formula I-C (“Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds can further be prepared in an  
10      alternate manner to procedures disclosed above and in Schemes 1, 2, 3, 9, and 10. Schemes 13, 14, and 15 detail alternate procedures to prepare (R)-Chiral Halogenated 1-Substitutedamino-2-propanols” compounds of the present invention by initial formation of an halogenated, oxygen containing secondary alkylamines VLX and VLXX (“Phenyl Alkylamines”) and VLXX-O (“Phenyl  
15      Oxy Alkylamines”). Said secondary alkylamines VLX and VLXX (“Phenyl Alkylamines”) and VLXX-O (“Phenyl Oxy Alkylamines”) can be converted according to Schemes 13, 14, and 15 to Formula I-HP (“Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-  
propanols”), Formula I-HPC (“Polycyclic Aryl-Heteroaryl (R)-Chiral  
20      Halogenated 1-Substitutedamino-2-Propanols”), and Formula I-C (“Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds by reaction with appropriate aromatic halides such as aryl bromides and heteroaryl bromides as desired.

- 25      Formula I-HP (“Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols”), Formula I-HPC (“Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”), and Formula I-C (“Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds can further be prepared in an alternate manner to procedures disclosed above and in Schemes 1, 2, 3, 9, 10,  
30      13, 14, and 15. Another alternate procedure to prepare “(R)-Chiral Halogenated 1-Substitutedamino-2-propanols” compounds of the present invention can be achieved by reacting secondary amines of Formula XIII-A-H (“Secondary Heteroaryl Amines”) and Formula XIII-A (“Secondary Phenyl Amines”) with certain cyclic sulfates. Cyclic sulfates useful in the preparation  
35      of “(R)-Chiral Halogenated 1-Substitutedamino-2-propanols” compounds of Formulas I-HP, I-HPC, and I-CP have a halogenated or haloalkoxy carbon adjacent to the cyclic sulfate. Some cyclic sulfates useful for the preparation of

- "(R)-Chiral Halogenated 1-Substitutedamino-2-propanols" compounds of Formulas I-HP, I-HPC, and I-CP have been described by K. P. M. Vanhessche and K. B. Sharpless in Chem. Eur. J. 1997, Vol. 3, No. 4, pages 517-522 and references cited therein. (2R)-(+)-3,3,3-Trifluoro-1,2-
- 5 propanediol can be prepared as described in the reference cited immediately above from 3,3,3-trifluoropropene followed by separation from the predominating (2S)-(-)-3,3,3-trifluoro-1,2-propanediol. Alternatively, (2R)-(+)-3,3,3-Trifluoro-1,2-propanediol can be prepared by hydrolysis of (2R)-(+)-3,3,3-Trifluoro-2,3-epoxypropane analogous to the procedure described
- 10 by described by McBee and Burton in J. Am. Chem. Soc., 1952, Vol. 74, page 3022. (2R)-(+)-3,3,3-Trifluoro-1,2-propanediol is converted by reaction with a slight excess of sulfonyl chloride in the presence of 2.5 molar equivalents of imidazole, methylene chloride solvent, and at a temperature of -20 °C to give the desired (4R)-(+)-4-trifluoromethyl-2,2-dioxo-1,3,2-
- 15 dioxathiolane. Reaction of other (R)-Chiral haloalkyl or haloalkoxyalkyl substituted 1,2-ethanediols can afford the corresponding (4R)-substituted-2,2-dioxo-1,3,2-dioxathiolanes. Reaction of (4R)-(+)-4-trifluoromethyl-2,2-1,3,2-dioxathiolane or another (4R)-substituted-2,2-dioxo-1,3,2-dioxathiolane with a secondary amine of Formula XIII A-H ("Secondary Heteroaryl Amines")
- 20 and Formula XIII-A ("Secondary Phenyl Amines") in an anhydrous polar, non-protic solvent such as tetrahydrofuran or acetonitrile at 25-60 °C until the reaction is complete can afford the mono-sulfate ester of a compound of Formulas I-HP, I-HPC, and I-CP. Removal of the solvent followed by addition of diethyl ether and excess 20% aqueous sulfuric acid can lead to a
- 25 precipitant of the crude mono-sulfate ester of a compound of Formulas I-HP, I-HPC, and I-CP. This precipitant can be filtered, the solid can be washed with ether, it can be resuspended in aqueous 20% sulfuric acid, and can be heated to 80-95 °C to give an aqueous solution of the sulfate salt of crude a compound of Formulas I-HP, I-HPC, and I-CP. Neutralization of the aqueous solution,
- 30 extraction with a water immiscible solvent such as diethyl ether or methylene chloride, drying the organic solvent over anhydrous magnesium sulfate, and removal of solvent can afford a compound of Formulas I-HP, I-HPC, and I-CP. Compounds of Formulas I-HP, I-HPC, and I-CP can be purified as described previously. By using a wide variety of (R)-Chiral diols, secondary amines of Formula XIII A-H ("Secondary Heteroaryl Amines") and Formula
- 35 XIII-A ("Secondary Phenyl Amines"), and reaction conditions described

herein, a large variety of compounds of Formulas I-HP, I-HPC, and I-CP may be preparable.

- A particularly useful procedures to prepare Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated I-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated I-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds of the present invention in which the heteroaryl group is directly bonded is disclosed in Schemes 11 and 12. An halogenated, hydroxy containing primary alkylamine XVL ("Generic Substituted Alkylamine") formed according to Scheme 9 is itself converted by reaction with LXXI-AH ("Heteroaryl Halide") to afford secondary amine VLXX-H ("Heteroaryl Secondary Amine) using procedures disclosed in Scheme 11 and above. VLXX-H is converted to Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated I-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by alkylation chemistry with an aralkyl bromide or aralkyloxyalkyl bromide using either of two procedures disclosed in Scheme 12. Isolation and purification is effected as disclosed previously.
- Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated I-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds can themselves serve as intermediates for conversion to additional compounds of this invention. Compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC and others of the present invention useful as intermediates include those in which the R<sub>7</sub> position substituent in Formulas I-H, I-HP, I-C, I-CP, and I-HPC is a bromo group, hydroxyl group, sulfhydryl group, bromomethyl or other bromoalkyl groups,

nitro group, amino group, methoxycarbonyl or other alkoxy carbonyl groups, cyano group, or acyl group. Other preferred compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC and the present invention useful as intermediates include those in which the R<sub>10</sub> position substituent is a bromo group, hydroxyl

- 5 group, sulphydryl group, bromomethyl or other bromoalkyl groups, nitro group, amino group, methoxy carbonyl or other alkoxy carbonyl groups, cyano group, or acyl groups. Other compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC and the present invention useful as intermediates include those in which one or more of R<sub>6</sub>, R<sub>7</sub>, R<sub>11</sub>, and R<sub>12</sub> substituents in Formula VII is a
- 10 bromo group, hydroxyl group, sulphydryl group, bromomethyl or other bromoalkyl groups, nitro group, amino group, methoxy carbonyl or other alkoxy carbonyl groups, cyano group, or acyl groups.

A 3-bromo substituent at the R<sub>7</sub> position in Formula I-CP ("Polycyclic

3-Bromophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds can be reacted with a phenol to afford, as described in Examples, 3-phenoxy compounds of the present invention of Formula I-CP ("Polycyclic 3-Phenoxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").

A 3-bromo substituent at the R<sub>7</sub> position in Formula I-HP and I-HPC ("Polycyclic 3-Bromophenyl and 3-Bromoheteroaryl/Aryl-Heteroaryl (R)-

- 20 Chiral Halogenated 1-Substitutedamino-2-Propanols") can, as shown in Scheme 4, be reacted with a phenol to afford, as described in Examples, additional compounds of the present invention of Formula I-HP and I-HPC ("Polycyclic 3-Aryloxyaryl, 3-Heteroaryloxyaryl, 3-Heteroaryloxyheteroaryl, 3-Aryloxyheteroaryl, 3-Arylthioaryl, 3-Heteroarylthioaryl, 3-Heteroarylthioheteroaryl, and 3-Arylthioheteroaryl Aryl and Heteroaryl/Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").

A 3-bromo substituent at the R<sub>7</sub> position in Formula I-CP ("Polycyclic 3-Bromophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") can be reacted, as shown in Scheme 7, with an aryl borinate or an aryl tin to afford, as described in Examples, additional compounds of the present invention of Formula I-CP ("Polycyclic 3-Arylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").

- Scheme 8 discloses the conversion of a 3-bromo substituent at the R<sub>7</sub> position in Formula I-CP ("Polycyclic 3-Bromophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by reaction with a primary or

secondary amine to afford, as described in **Examples**, additional compounds of the present invention of Formula I-CP (“Polycyclic 3- R<sub>22</sub>aminophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).

- Conversion of a 3-bromo substituent at the R<sub>10</sub> position in Formula I-CP (“Polycyclic 3-Bromophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds by reaction with an aryl borinate can afford, as described in **Examples**, additional compounds of the present invention of Formula I-CP (“Polycyclic 3-Arylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).
- Conversion of a 3-bromo substituent at the R<sub>10</sub> position in Formula I-CP (“Polycyclic 3-Bromophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds by reaction with a heteroaryl dibutyl tin compound can afford, as described in **Examples**, additional compounds of the present invention of Formula I-CP (“Polycyclic 3-Heteroarylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).
- Conversion of a 3-bromomethyl substituent at the R<sub>7</sub> position in Formula I-CP (“Polycyclic 3-Bromomethylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) by reaction with an aryl borinate can afford, as described in **Examples**, additional compounds of the present invention of Formula I-CP (“Polycyclic 3-Arylmethylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).
- Scheme 5 discloses the conversion of a 3-hydroxyl substituent at the R<sub>7</sub> position in Formula I-HP and I-HPC (“Polycyclic 3-Hydroxyphenyl and 3-Hydroxyheteroaryl/Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) by reaction with an aryl bromide or heteroaryl bromide to afford, as described in **Examples**, additional compounds of the present invention of Formula I-HP and I-HPC (“Polycyclic 3-Aryloxyaryl, 3-Heteroaryloxyaryl, 3-Heteroaryloxyheteroaryl, and 3-Aryloxyheteroaryl Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).
- Conversion of a 3-hydroxyl substituent at the R<sub>7</sub> position in Formula I-CP (“Polycyclic 3-Hydroxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds by reaction with an aryl bromide can afford, as described in **Examples**, additional compounds of the present invention of Formula I-CP (“Polycyclic 3-Phenoxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).

- Conversion of a 3-hydroxyl substituent at the R<sub>7</sub> position in Formula I-HP and I-HPC ("Polycyclic 3-Hydroxyphenyl and 3-Hydroxyheteroaryl/Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by reaction with an aralkyl bromide or heteroaralkyl bromide can afford, as described above for Scheme 5 and in Examples, additional compounds of the present invention of Formula I-HP and I-HPC ("Polycyclic 3-Aralkyloxyaryl, 3-Heteroaralkyloxyaryl, 3-Heteroaralkyloxyheteroaryl, and 3-Aralkyloxyheteroaryl Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").
- Conversion of a 3-hydroxyl substituent at the R<sub>7</sub> position in Formula I-CP ("Polycyclic 3-Hydroxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by reaction with an aralkyl bromide can afford, as described in Examples, additional compounds of the present invention of Formula I-CP ("Polycyclic 3-Aralkyloxyaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").
- Conversion of a 3-hydroxyl substituent at the R<sub>7</sub> position in Formula I-CP ("Polycyclic 3-Hydroxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by reaction with an R<sub>17</sub>-bromide can afford, as described in Examples, additional compounds of the present invention of Formula I-CP ("Polycyclic 3- R<sub>17</sub>-oxyaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").
- Conversion of a 3-thio substituent at the R<sub>7</sub> position in Formula I-CP ("Polycyclic 3-thiophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by reaction with an R<sub>17</sub>-bromide can afford, as described in Examples, additional compounds of the present invention of Formula I-CP ("Polycyclic 3- R<sub>17</sub>thiaaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"). "Polycyclic 3- R<sub>17</sub>thiaaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols" can be oxidized to sulfonyl compounds of Formula I-CP ("Polycyclic 3- R<sub>17</sub>sulfonylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").
- Conversion of a 3-nitro substituent at the R<sub>7</sub> position in Formula I-CP ("Polycyclic 3-Nitrophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by hydrogenation can afford, as described in

- Examples.** additional compounds of the present invention of Formula I-CP (“Polycyclic 3-Aminophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”). “Polycyclic 3-Aminophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols” can be acylated to acyl amide compounds of
- 5      Formula I-CP (“Polycyclic 3-R<sub>17</sub>-C(O)amidophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).
- Conversion of a 3-amino substituent at the R<sub>7</sub> position in Formula I-CP (“Polycyclic 3-Aminophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds by reaction with carbonyl compounds can afford, as
- 10     described in **Examples.** additional compounds of the present invention of Formula I-CP (“Polycyclic 3-(Saturated Nitrogen Heterocycl-1yl)aryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols” and (“Polycyclic 3-(Unsaturated Nitrogen Heterocycl-1yl)aryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).
- 15     Conversion of a 3-methoxycarbonyl substituent at the R<sub>7</sub> position in Formula I-CP (“Polycyclic 3-Carbomethoxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds by reaction with amination reagents can afford, as described in **Examples.** additional compounds of the present invention of Formula I-CP (“Polycyclic 3-Carboxamidophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).
- 20     Conversion of a 3-cyano substituent at the R<sub>7</sub> position in Formula I-CP (“Polycyclic 3-Cyanophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds by reaction with organometallic reagents can afford, as described in **Examples.** additional compounds of the present invention of
- 25     Formula I-CP (“Polycyclic 3-Acylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”). Said “Polycyclic 3-Acylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols” can be reduced to hydroxyl compounds of Formula I-CP (“Polycyclic 3-hydroxysubstitutedmethylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).
- 30     Conversion of a 3-methoxycarbonyl substituent at the R<sub>10</sub> position in Formula I-CP (“Polycyclic 3-Carbomethoxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”) compounds by reaction with amination reagents can afford, as described in **Examples.** additional compounds of the present invention of Formula I-CP “Polycyclic 3-Carboxamidophenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols”).

Conversion of a 3-methoxycarbonyl substituent at the R<sub>10</sub> position in Formula I-CP ("Polycyclic 3-Carbomethoxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by reaction with an organometallic reagent can afford, as described in Examples, additional

- 5 compounds of the present invention of Formula I-CP "Polycyclic 3-(bis- R<sub>20</sub>-hydroxymethyl)aryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").

Conversion of a 3-methoxycarbonyl substituent at the R<sub>10</sub> position in Formula I-CP ("Polycyclic 3-Carbomethoxyphenyl (R)-Chiral Halogenated 1-

- 10 Substitutedamino-2-Propanols") compounds by reaction with lithium aluminum hydride can afford, as described in Examples, additional compounds of the present invention of Formula I-CP ("Polycyclic 3-Hydroxymethylphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").

- 15 Conversion of a 3-methoxycarbonyl substituent at the R<sub>10</sub> position in Formula I-CP ("Polycyclic 3-Carbomethoxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by reaction with an alkylation reagent can afford, as described in Examples, additional compounds of the present invention of Formula I-CP ("Polycyclic 3-(bis- R<sub>21</sub>-

- 20 hydroxymethyl)phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").

Conversion of a 3-methoxycarbonyl substituent at the R<sub>10</sub> position in Formula I-CP ("Polycyclic 3-Carbomethoxyphenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") compounds by reaction intially with an

- 25 amidation reagent and then an R<sub>20</sub>-organometallic reagent can afford, as described in Examples, additional compounds of the present invention of Formula I-CP ("Polycyclic 3-( R<sub>20</sub>-carbonyl)phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols").

- Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and

- Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols") and other compounds of this invention possessing hydroxyl, thiol, and amine functional groups can be converted to a wide variety derivatives. The hydroxyl group, wherein R<sub>16</sub> is a hydrogen and
- 5 X is oxy, of compounds of Formulas I-H, I-HP, I-HPC, I-C, and I-CP can be readily converted to esters of carboxylic, sulfonic, carbamic, phosphonic, and phosphoric acids. Acylation to form a carboxylic acid ester is readily effected using a suitable acylating reagent such as an aliphatic acid anhydride or acid chloride. The corresponding aryl and heteroaryl acid anhydrides and acid
- 10 chlorides can also be used. Such reactions are generally carried out using an amine catalyst such as pyridine in an inert solvent. In like manner, compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP that have at least one hydroxyl group present in the form of an alcohol or phenol can be acylated to its corresponding esters. Similarly, carbamic acid
- 15 esters (urethans) can be obtained by reacting any hydroxyl group with isocyanates and carbamoyl chlorides. Sulfonate, phosphonate, and phosphate esters can be prepared using the corresponding acid chloride and similar reagents. Compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP that have at least one thiol group present can be
- 20 converted to the corresponding thioesters derivatives analogous to those of alcohols and phenols using the same reagents and comparable reaction conditions. Compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP that have at least one primary or secondary amine group present can be converted to the corresponding amide derivatives.
- 25 Amides of carboxylic acids can be prepared using the appropriate acid chloride or anhydrides with reaction conditions analogous to those used with alcohols and phenols. Ureas of the corresponding primary or secondary amine can be prepared using isocyanates directly and carbamoyl chlorides in the presence of an acid scavenger such as triethylamine or pyridine. Sulfonamides can be
- 30 prepared from the corresponding sulfonyl chloride in the presence of aqueous sodium hydroxide. Suitable procedures and methods for preparing these derivatives can be found in House's Modern Synthetic Reactions, W. A. Benjamin, Inc., Shriner, Fuson, and Curtin in The Systematic Identification of Organic Compounds, 5th Edition, John Wiley & Sons, and Fieser and
- 35 Fieser in Reagents for Organic Synthesis, Volume 1, John Wiley & Sons. Reagents of a wide variety that can be used to derivatize hydroxyl, thiol, and

amines of compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP are available from commerical sources or the references cited above, which are incorporated herein by reference.

Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral

- 5 Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic  
Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-  
propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral  
Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic  
Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and  
10 Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-  
Substitutedamino-2-Propanols") and other compounds of this invention  
possesing hydroxyl, thiol, and amine functional groups can be alkylated to a  
wide variety derivatives. The hydroxyl group, wherein R<sub>16</sub> is a hydrogen and  
X is oxy, of compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-  
15 H, Cyclo I-C, and Cyclo I-CP can be readily converted to ethers. Alkylation to  
form an ether is readily effected using a suitable alkylating reagent such as an  
alkyl bromide, alkyl iodide or alkyl sulfonate. The corresponding aralkyl,  
heteroaralkyl, alkoxyalkyl, aralkyloxyalkyl, and heteroaralkyloxyalkyl  
bromides, iodides, and sulfonates can also be used. Such reactions are  
20 generally carried out using an alkoxide forming reagent such as sodium  
hydride, potassium t-butoxide, sodium amide, lithium amide, and n-butyl  
lithium using an inert polar solvent such as DMF, DMSO, THF, and similar,  
comparable solvents. In like manner, compounds of Formulas I-H, I-HP, I-C,  
I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP that have at least one  
25 hydroxyl group present in the form of an alcohol or phenol can be alkylated to  
their corresponding ethers. Compounds of Formulas I-H, I-HP, I-C, I-CP, I-  
HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP that have at least one thiol group  
present can be converted to the corresponding thioether derivatives analogous  
to those of alcohols and phenols using the same reagents and comparable  
30 reaction conditions. Compounds of Formulas I-H, I-HP, I-C, I-CP, I-HPC,  
Cyclo I-H, Cyclo I-C, and Cyclo I-CP that have at least one primary,  
secondary or tertiary amine group present can be converted to the  
corresponding quaternary ammonium derivatives. Quaternary ammonium  
derivatives can be prepared using the appropriate bromides, iodides, and  
35 sulfonates analogous to those used with alcohols and phenols. Conditions  
involve reaction of the amine by warming it

with the alkylating reagent with a stoichiometric amount of the amine (i.e., one equivalent with a tertiary amine, two with a secondary, and three with a primary). With primary and secondary amines, two and one equivalents, respectively, of an acid scavenger are used concurrently. Tertiary amines can

- 5 be prepared from the corresponding primary or secondary amine by reductive alkylation with aldehydes and ketones using reduction methods 1, 2, or 3 as shown in Scheme 1. Suitable procedures and methods for preparing these derivatives can be found in House's Modern Synthetic Reactions, W. A. Benjamin, Inc., Shriner, Fuson, and Curtin in The Systematic Identification  
10 of Organic Compounds, 5th Edition, John Wiley & Sons, and Fieser and Fieser in Reagents for Organic Synthesis, Volume 1, John Wiley & Sons. Perfluoroalkyl derivatives can be prepared as described by DesMarteau in J. Chem. Soc. Chem. Commun. 2241 (1998). Reagents of a wide variety that can be used to derivatize hydroxyl, thiol, and amines of compounds of  
15 Formulas I-H, I-HP, I-C, I-CP, I-HPC, Cyclo I-H, Cyclo I-C, and Cyclo I-CP are available from commercial sources or the references cited above, which are incorporated herein by reference.

Formula I-H ("Generic Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-alkanols"), Formula I-HP ("Generic

- 20 Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-propanols"), Formula I-HPC ("Polycyclic Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols"), Formula I-C ("Polycyclic Phenyl (R)-Chiral Halogenated 1-Substitutedamino-(n+1)-Alkanols"), and Formula I-CP ("Polycyclic Phenyl (R)-Chiral Halogenated 1-

- 25 Substitutedamino-2-Propanols") and certain other compounds of this invention can be converted, according to Scheme 6, to the corresponding cyclic derivatives represented by "Tricyclic *tertiary*-oxyalkylamines" and exemplified by Formulas Cyclo I-H ("Polycyclic Aryl and Heteroaryl (R)-Chiral Halogenated (N+1)-Cycloazaalkoxy"), Cyclo I-C ("Polycyclic Aryl Phenyl

- 30 (R)-Chiral Halogenated (N+1)-Cycloazaalkoxy") and Cyclo I-CP ("Polycyclic Phenyl Phenyl (R)-Chiral Halogenated Cycloazaalkoxy"). The hydroxyl group, wherein R<sub>16</sub> is a hydrogen and X is oxy, of compounds of Formulas

I-H, I-HP, I-C, I-CP, and I-HPC can be cyclized to corresponding cyclic ethers. Compounds suitable for cyclization will normally have at least one

- 35 leaving group within 5 to 10 continuous atoms of the hydroxyl group wherein R<sub>16</sub> is a hydrogen and X is oxy. Most preferably the leaving group will be

within 5 to 7 atoms of the hydroxyl group so as to form a 6 to 8 membered ring heteroatom containing ring. When the leaving group is part of an aromatic ring system, the leaving group will be preferably in an ortho position.

Suitable leaving groups generally include halides, sulfates, sulfonates,

- 5 trisubstituted amino, disubstituted sulfonium, diazonium, and like, and, in the case of aromatic systems, also includes nitro, alkoxy, aryloxy, heteroaryloxy, and alkylthio.

The cyclization reaction to form "Tricyclic *tertiary*-oxyalkylamines" of Formulas Cyclo I-H, Cyclo I-C and Cyclo I-CP can be accomplished by

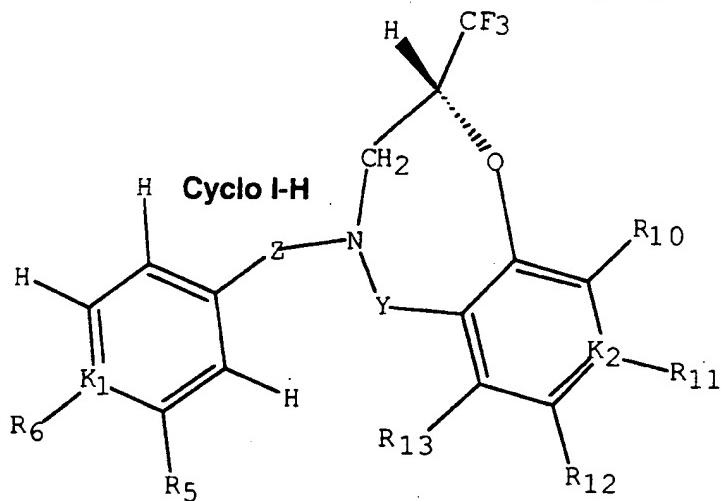
- 10 aromatic and aliphatic nucleophilic substitution reactions such as those disclosed in March's Advanced Organic Chemistry, 4th Edition, John Wiley & Sons, especially at pages 293-412 and 649-658 and the references cited therein, which are incorporated herein by reference. Hydroxyl containing suitably substituted compounds can be converted to a cyclic analog by heating a

- 15 suitably substituted compound under anhydrous conditions in a suitable solvent, such as dimethylformamide, dimethylsulfoxide, N-methylpyrrolidone, tetraglyme, or hexamethylphosphoramide, in the presence of a suitable base such as potassium carbonate, cesium carbonate, sodium hydroxide, potassium *tertiary*-butoxide, or lithium diisopropylamide. Alternately, sodium amide in

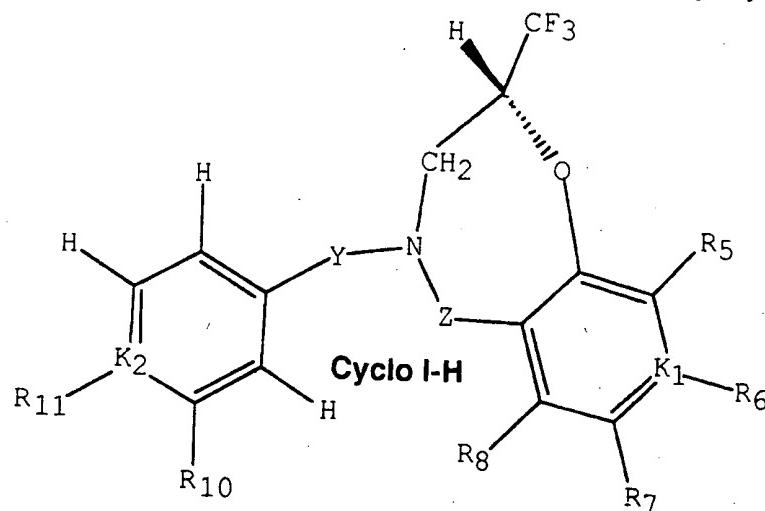
- 20 anhydrous ammonia solvent can be used. Temperatures in the range of -20 °C to 200 °C can be used for time periods of 30 minutes to more than 24 hours.

The preferred temperature can be selected by standard synthetic chemical technique balancing maximum yield, maximum purity, cost, ease of isolation and operation, and time required. Isolation of the "Tricyclic *tertiary*-oxyalkylamines" can be effected as described above for other *tertiary*-oxyalkylamines. Representative "Tricyclic *tertiary*-oxyalkylamines" prepared using the methodology described above are included in Table 5.

- 30 The following examples are provided to illustrate the present invention and are not intended to limit the scope thereof. Those skilled in the art will readily understand that known variations of the conditions and processes of the following preparative procedures can be used to prepare these compounds.

Table 5. Structure of Substituted Tricyclic *tertiary*-2-oxyalkylamines.

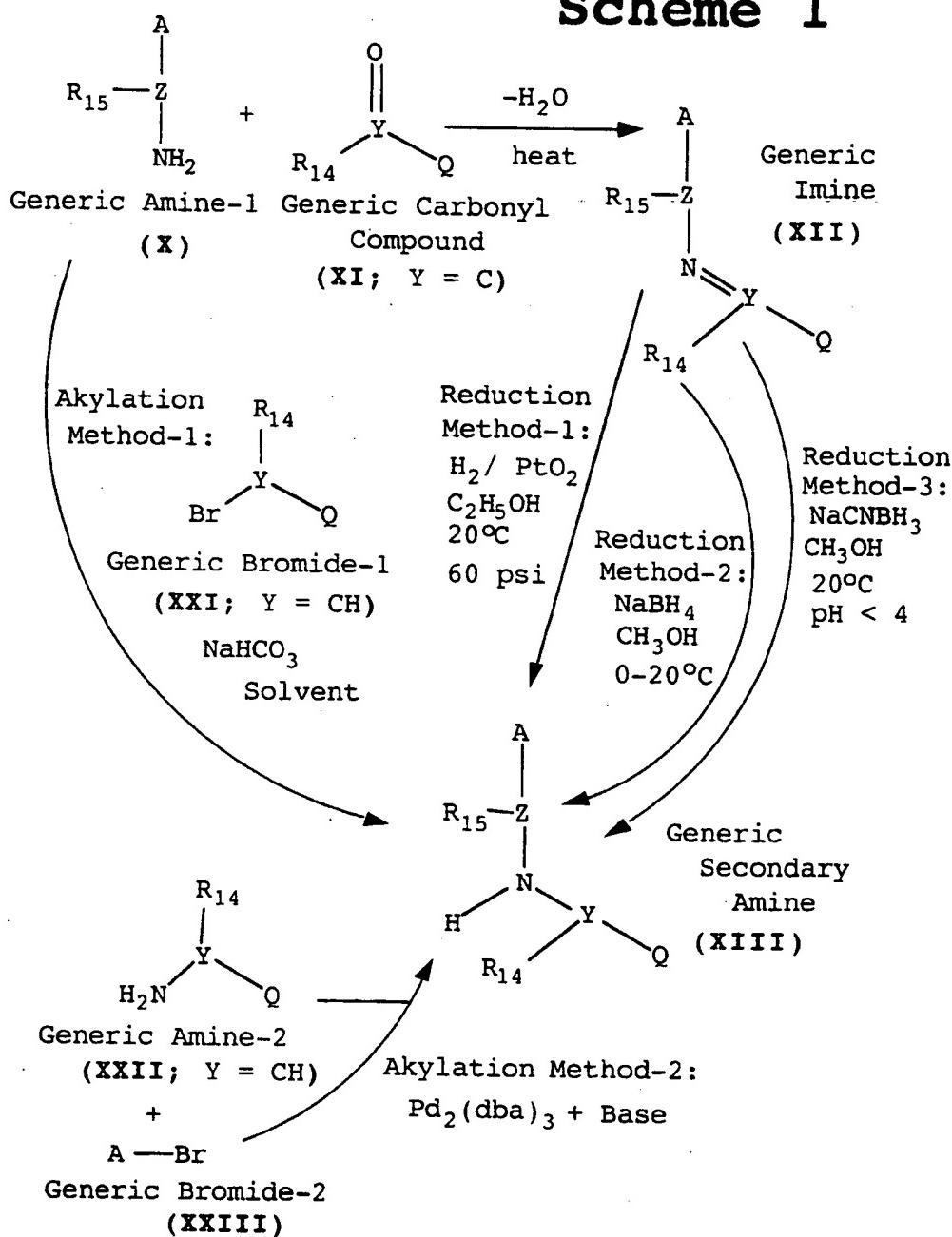
<u>Y</u>	<u>Z</u>	<u>R<sub>5</sub></u>	<u>K<sub>1</sub>-R<sub>6</sub></u>	<u>R<sub>10</sub></u>	<u>K<sub>2</sub>-R<sub>11</sub></u>	<u>R<sub>12</sub></u>	<u>R<sub>13</sub></u>
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	H	C- CF <sub>3</sub>	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	N	H	C- CF <sub>3</sub>	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	H	C- H	CF <sub>3</sub>	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	N	H	C- H	CF <sub>3</sub>	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	H	N	CF <sub>3</sub>	H
-	-	4-chloro-3-ethylphenoxy	C-H	H	C- CF <sub>3</sub>	H	H
-	-	4-chloro-3-ethylphenoxy	N	H	C- CF <sub>3</sub>	H	H
-	-	4-chloro-3-ethylphenoxy	C-H	H	C- H	CF <sub>3</sub>	H
-	-	4-chloro-3-ethylphenoxy	N	H	C- H	CF <sub>3</sub>	H
-	-	4-chloro-3-ethylphenoxy	C-H	H	N	CF <sub>3</sub>	H

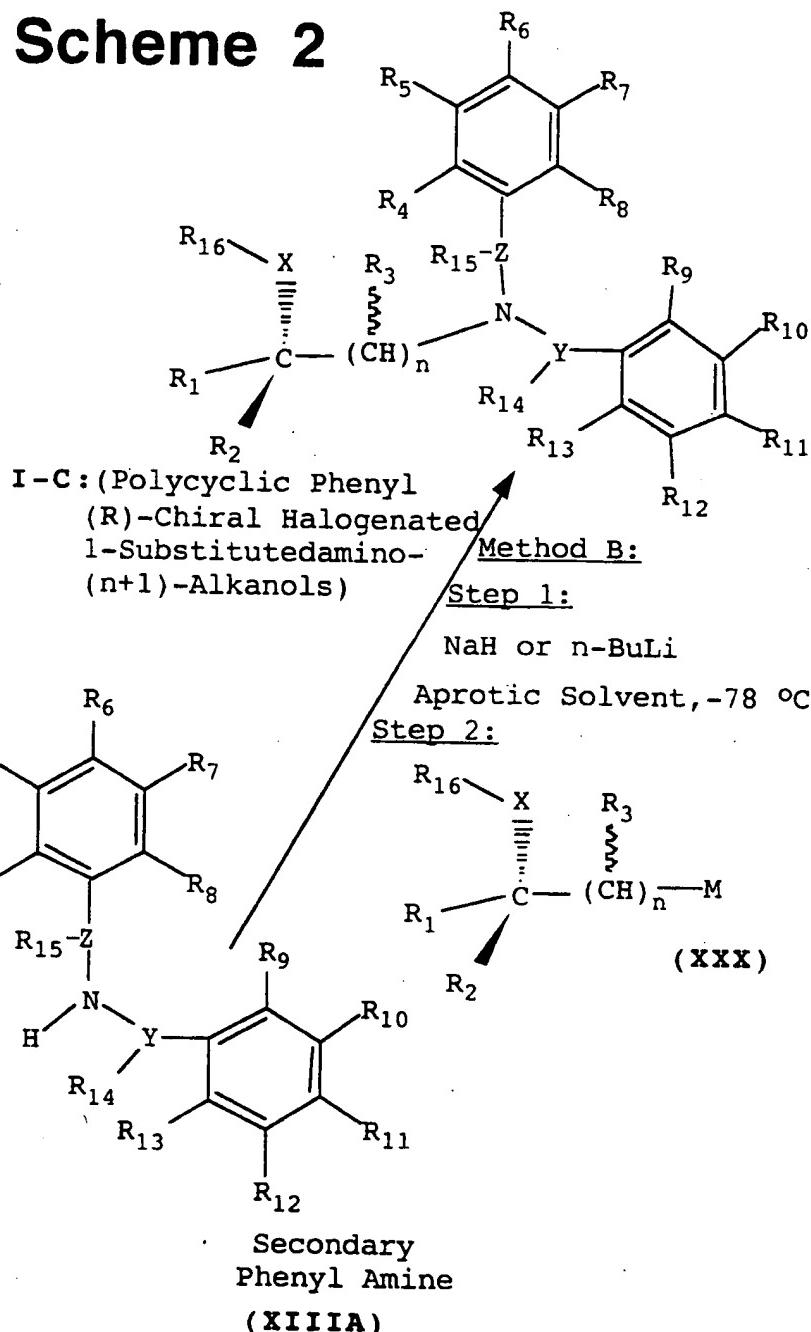
Table 5. (cont.) Structure of Substituted Tricyclic *tertiary*-2-oxyalkylamines.

<u>Y</u>	<u>Z</u>	<u>R<sub>5</sub></u>	<u>K<sub>1</sub>-R<sub>6</sub></u>	<u>R<sub>10</sub></u>	<u>K<sub>2</sub>-R<sub>11</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>8</sub></u>
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	OCF <sub>2</sub> CF <sub>2</sub> H	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	N	OCF <sub>2</sub> CF <sub>2</sub> H	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	OCF <sub>2</sub> CF <sub>2</sub> H	N	H	H
CH <sub>2</sub>	-	phenoxy	C-H	OCF <sub>2</sub> CF <sub>2</sub> H	C-H	H	H
CH <sub>2</sub>	-	phenoxy	N	OCF <sub>2</sub> CF <sub>2</sub> H	C-H	H	H
CH <sub>2</sub>	-	phenoxy	C-H	OCF <sub>2</sub> CF <sub>2</sub> H	N	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	CF <sub>2</sub> CF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	N	CF <sub>2</sub> CF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	CF <sub>2</sub> CF <sub>3</sub>	N	H	H
CH <sub>2</sub>	-	phenoxy	C-H	CF <sub>2</sub> CF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	phenoxy	N	CF <sub>2</sub> CF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	phenoxy	C-H	CF <sub>2</sub> CF <sub>3</sub>	N	H	H

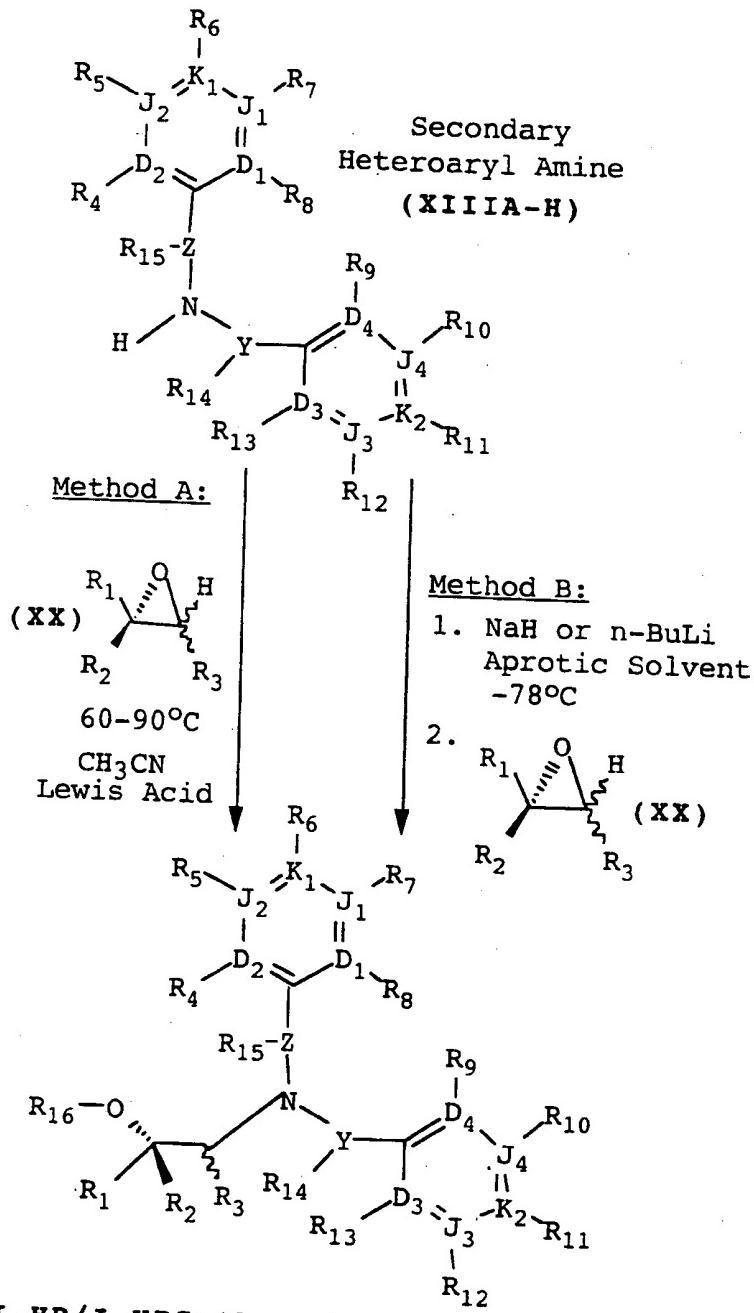
Table 5. (cont.) Structure of Substituted Tricyclic *tertiary*-2-oxyalkylamines.

<u>Y</u>	<u>Z</u>	<u>R<sub>5</sub></u>	<u>K<sub>1</sub>-R<sub>6</sub></u>	<u>R<sub>10</sub></u>	<u>K<sub>2</sub>-R<sub>11</sub></u>	<u>R<sub>7</sub></u>	<u>R<sub>8</sub></u>
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	CF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	N	CF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	CF <sub>3</sub>	N	H	H
CH <sub>2</sub>	-	phenoxy	C-H	CF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	phenoxy	N	CF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	phenoxy	C-H	CF <sub>3</sub>	N	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	OCF <sub>2</sub> CF <sub>2</sub> H	C-H	H	F
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	N	OCF <sub>2</sub> CF <sub>2</sub> H	C-H	H	F
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	OCF <sub>2</sub> CF <sub>2</sub> H	N	H	F
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	2-furyl	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	N	2-furyl	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	2-furyl	N	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	SCF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	N	SCF <sub>3</sub>	C-H	H	H
CH <sub>2</sub>	-	4-chloro-3-ethylphenoxy	C-H	SCF <sub>3</sub>	N	H	H

**Scheme 1**

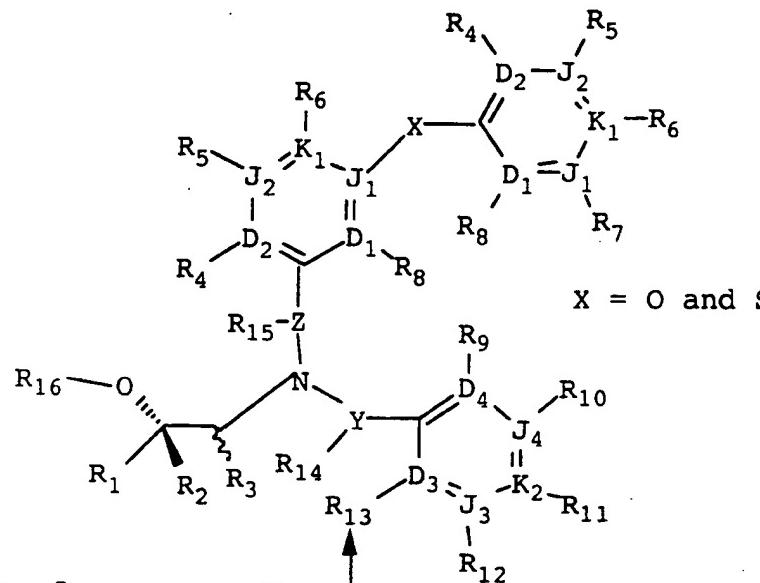
**Scheme 2**

### Scheme 3



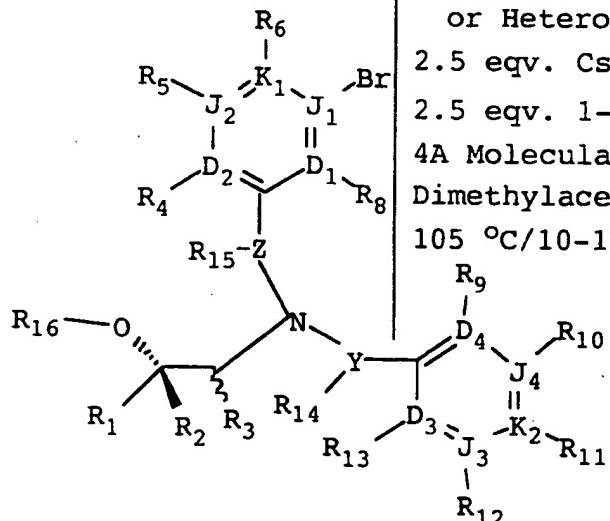
**I-HP/I-HPC: (Generic Polycyclic Aryl and Heteroaryl/Aryl-Heteroaryl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols; R<sub>16</sub> = H)**

**I-HP/I-HPC:** (Generic Polycyclic 3-Aryloxyaryl,  
3-Heteroaryloxyaryl, 3-Heteroaryloxyheteroaryl,  
3-Aryloxyheteroaryl, 3-Arylthioaryl,  
3-Heteroarylthioaryl, 3-Heteroarylthioheteroaryl,  
3-Arylthioheteroaryl Aryl and Heteroaryl/Aryl-  
Heteroaryl (R)-Chiral Halogenated  
1-Substitutedamino-2-Propanols)



**Scheme 4**

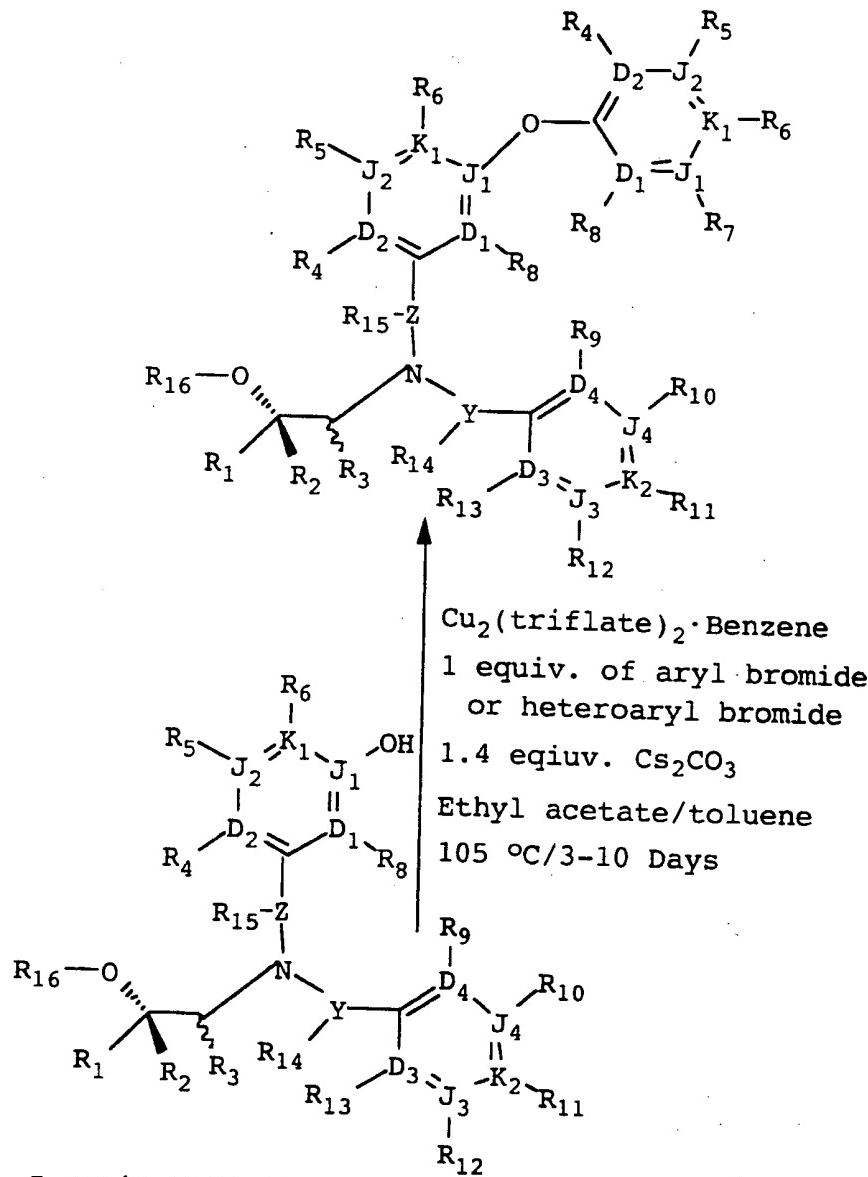
Cu<sub>2</sub>(triflate)<sub>2</sub> · Benzene  
2 equivalents of Aryl-OH,  
Aryl-SH, Heteroaryl-OH,  
or Heteroaryl-SH  
2.5 eqv. Cs<sub>2</sub>CO<sub>3</sub>  
2.5 eqv. 1-Naphthoic Acid  
4A Molecular Sieves  
Dimethylacetamide/toluene  
105 °C/10-14 Days



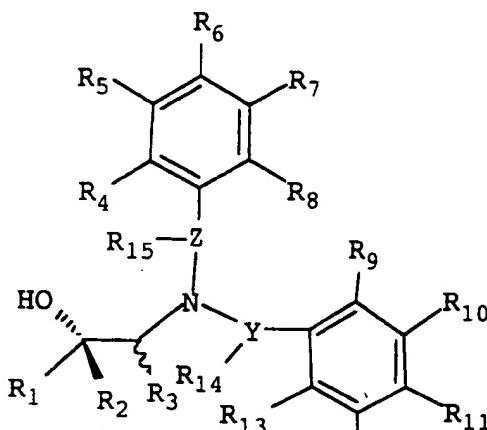
**I-HP/I-HPC:** (Generic Polycyclic 3-Bromo Aryl and  
Heteroaryl/Aryl-Heteroaryl (R)-Chiral  
Halogenated 1-Substitutedamino-2-Propanols)

## Scheme 5

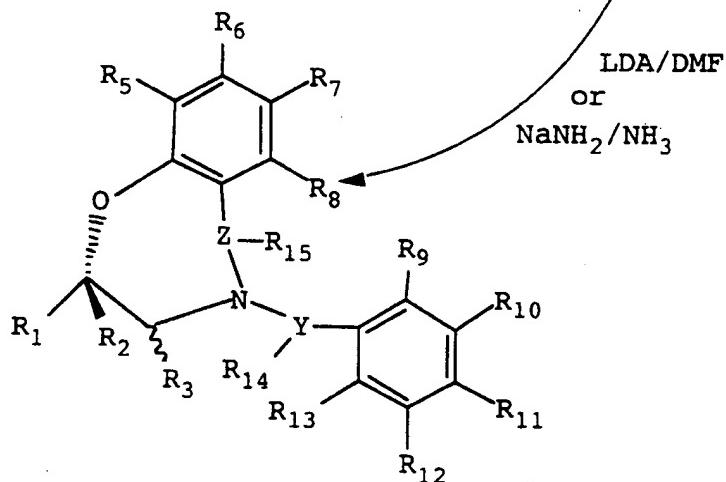
**I-HP/I-HPC:** (Generic Polycyclic 3-Aryloxyaryl,  
3-Heteroaryloxyaryl3-Aryloxyheteroaryl  
or 3-Heteroaryloxyheteroaryl  
Aryl-Heteroaryl (R)-Chiral Halogenated  
1-Substitutedamino-2-Propanols)



**I-HP/I-HPC:** (Generic Polycyclic 3-Hydroxy Aryl  
and Heteroaryl/Aryl-Heteroaryl (R)-Chiral  
Halogenated 1-Substitutedamino-2-Propanols)

**Scheme 6**

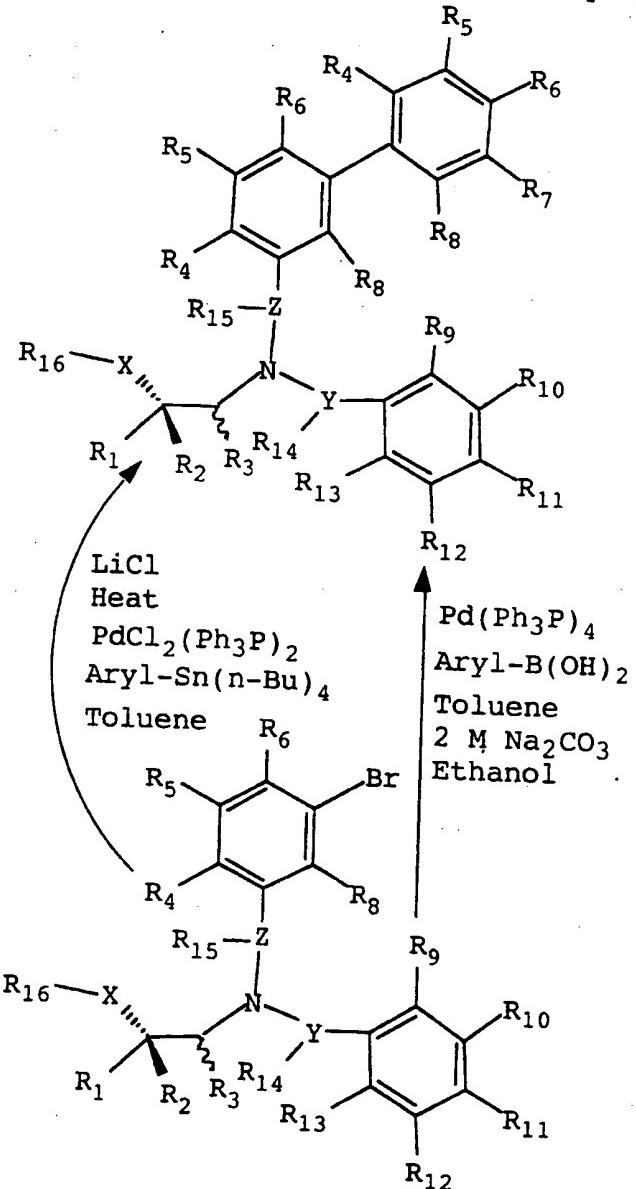
**I-CP:** (Generic Polycyclic Phenyl Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols)



**Cyclo I-CP:** (Polycyclic Phenyl Phenyl (R)-Chiral Halogenated Cycloazaalkoxy)

## Scheme 7

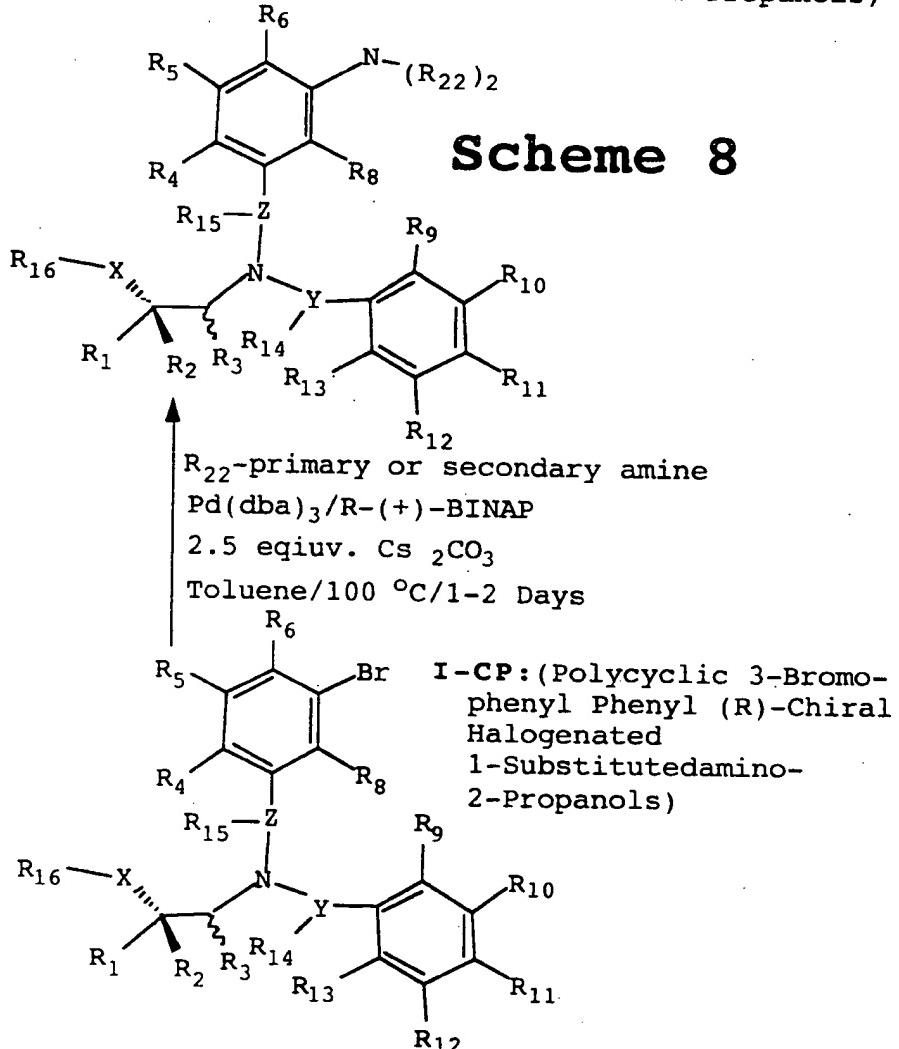
**I-CP:** (Polycyclic 3-Arylphenyl Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols)



**I-CP:** (Polycyclic 3-Bromophenyl Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols)

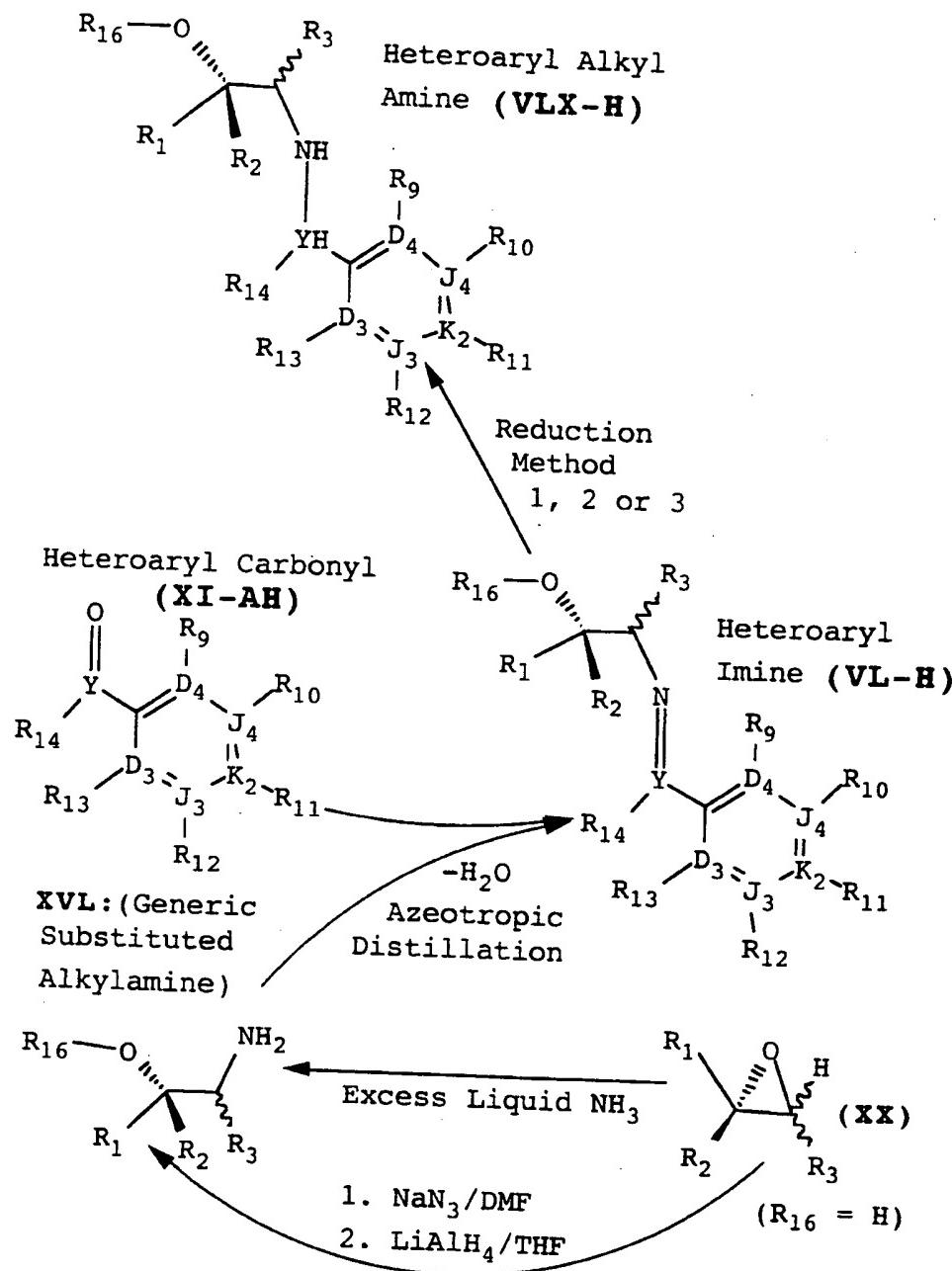
NOTE: Use of Heteroaryl- $\text{B}(\text{OH})_2$  will give the heteroaryl methyl analog of I-CP.

**I-CP:(Polycyclic 3-R<sub>22</sub>-aminophenyl Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols)**

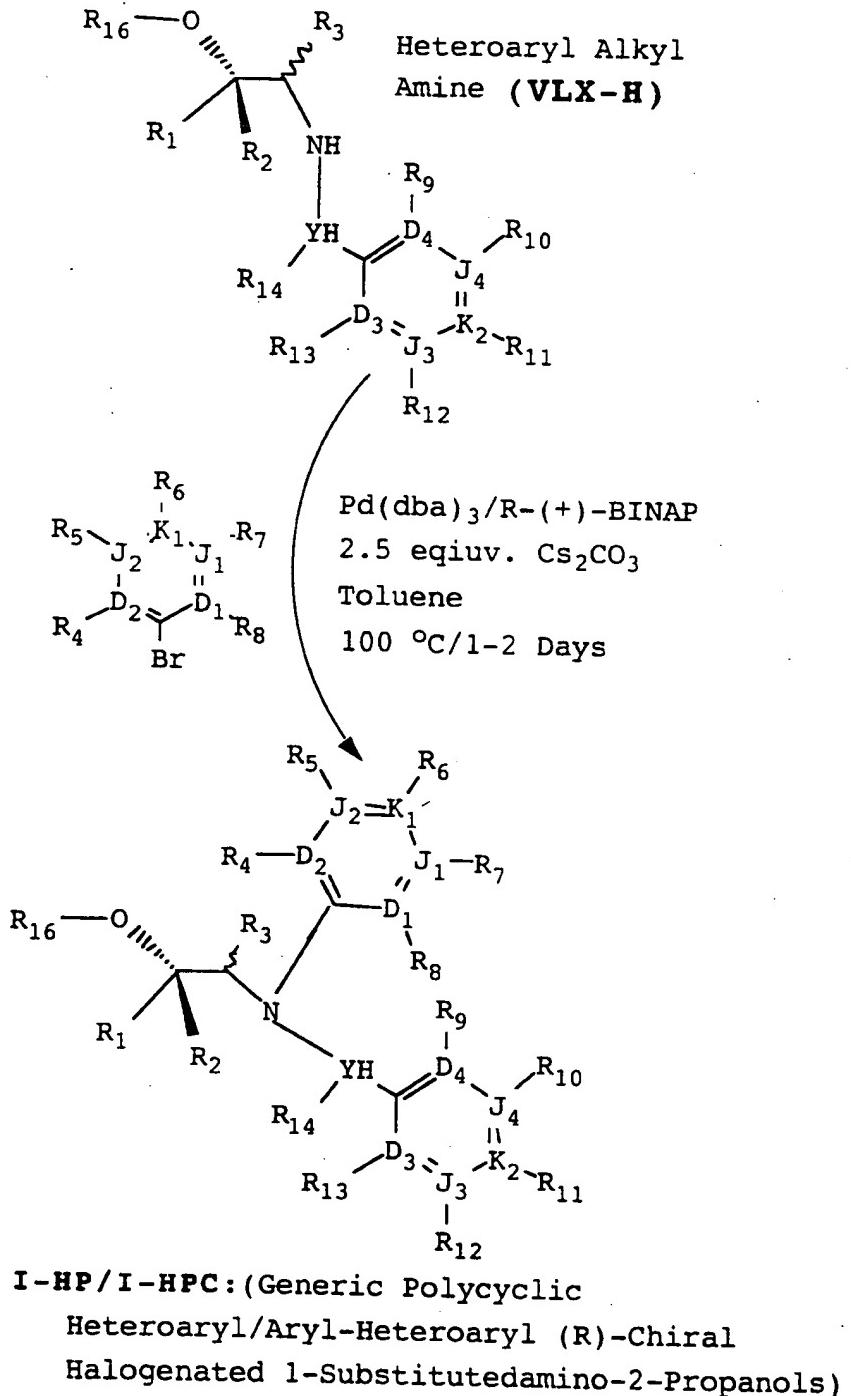


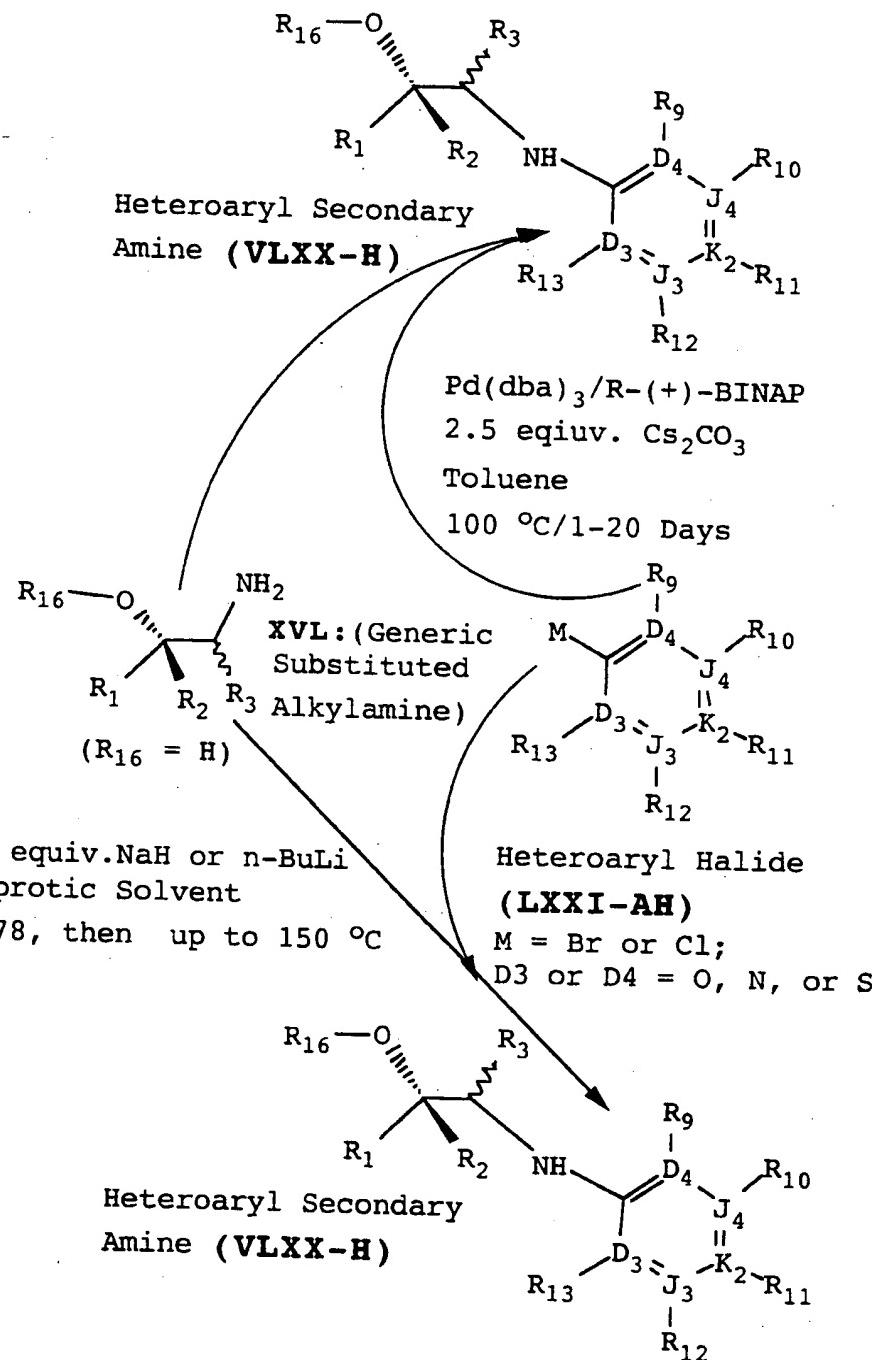
R<sub>22</sub> is selected independently from any one or two of the following groups: hydrido, hydroxy, aryloxy, alkyl, alkenyl, alkynyl, aryl, aralkyl, alkoxyalkyl, aralkoxyalkyl, alkylsulfinylalkyl, haloalkyl, haloalkenyl, halocycloalkyl, halocycloalkoxy, halocycloalkoxyalkyl, arylsulfinylalkyl, arylsulfonylalkyl, alkylamino cycloalkylsulfinylalkyl, cycloalkylsulfonylalkyl, heteroarylsulfonylalkyl, heteroarylsulfinylalkyl, aralkylsulfinylalkyl, aralkylsulfonylalkyl, hydroxyalkyl, amino, alkoxy, alkylsulfonylalkyl, aralkylthioalkyl, heteroaralkylthioalkyl, heteroaryloxyalkyl, alkenyloxyalkyl, haloalkoxy, haloalkenyl, haloalkoxyalkyl, heteroaryl, halocycloalkenyl, heteroarylalkyl, aryloxyalkyl, halocycloalkenyl, and heteroarylthioalkyl.

## Scheme 9

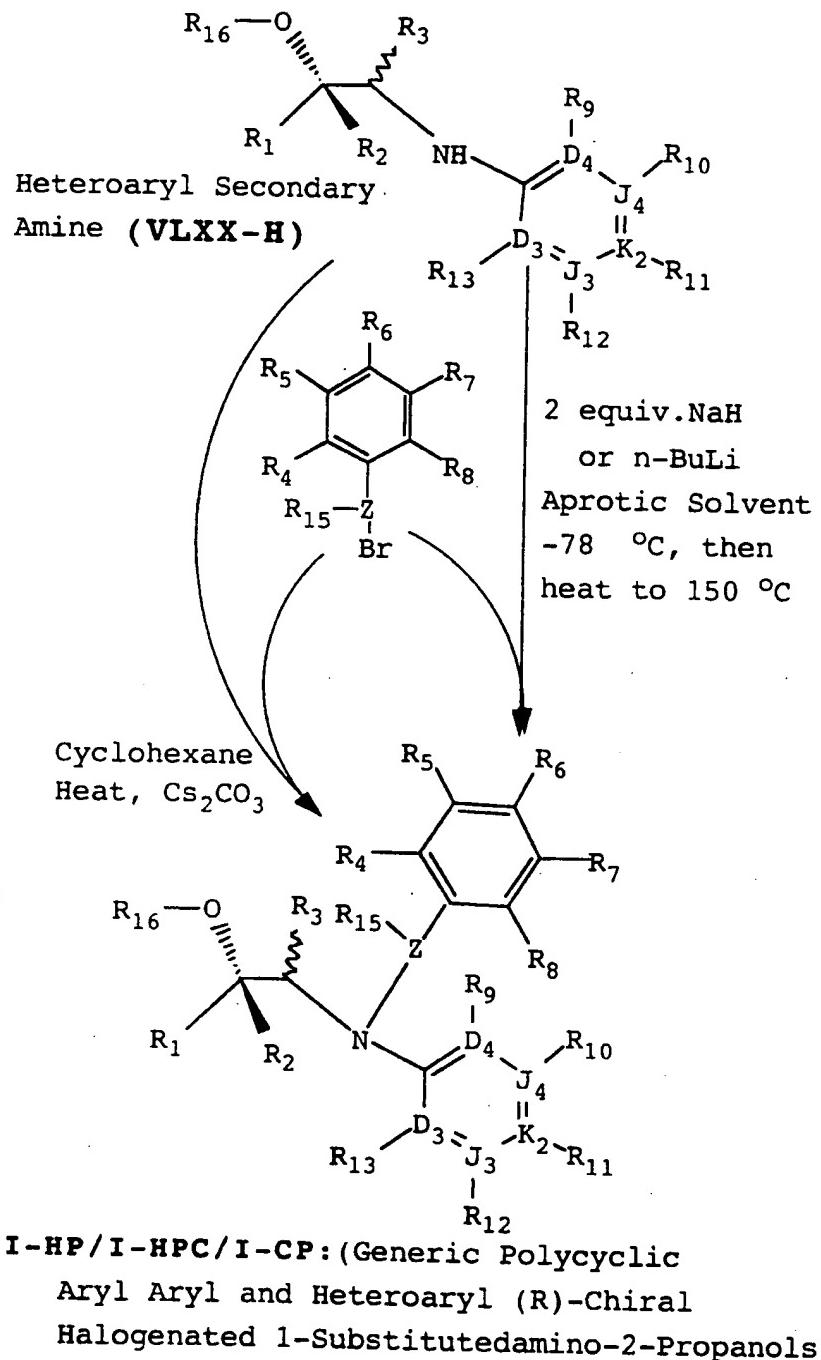


### Scheme 10



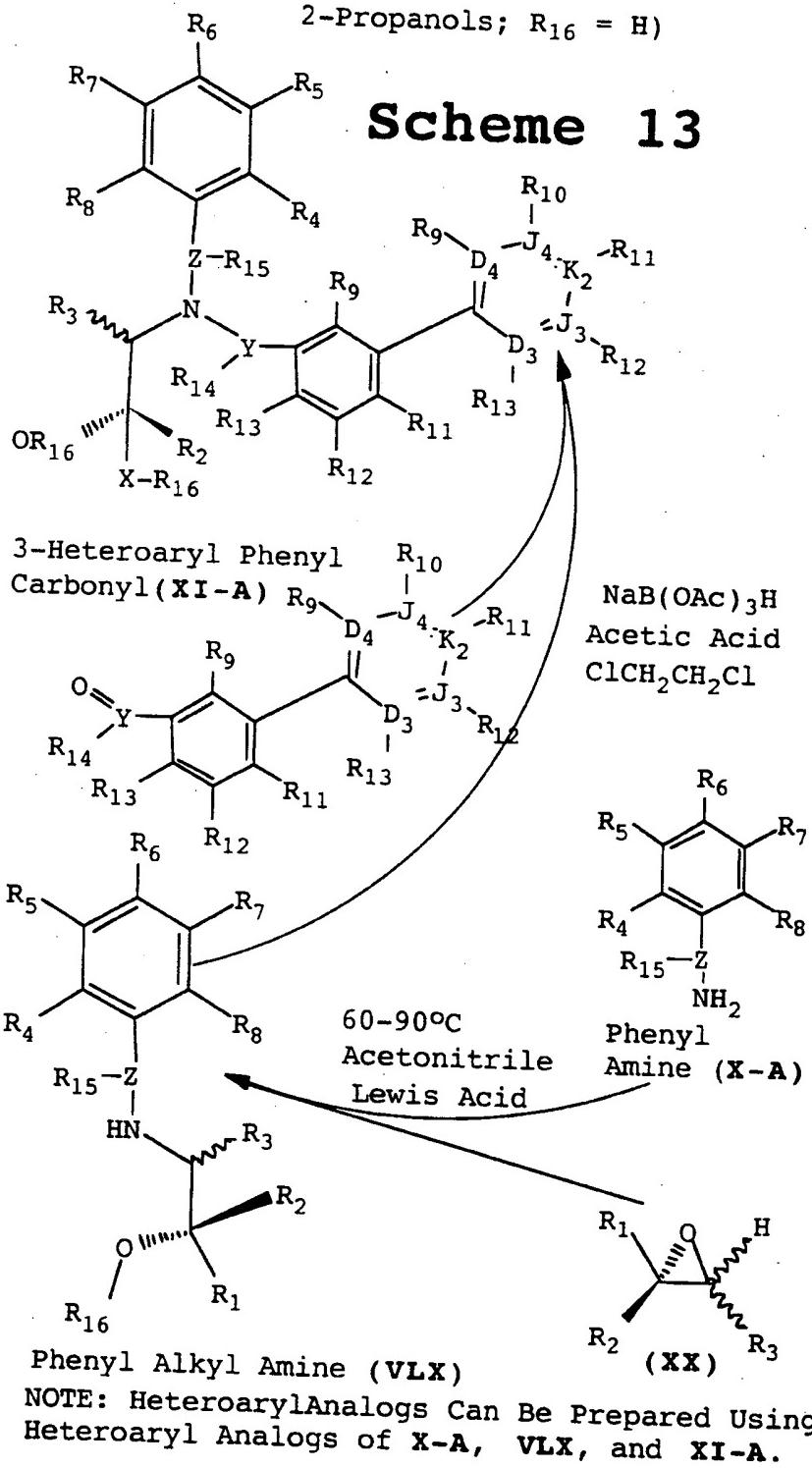
**Scheme 11**

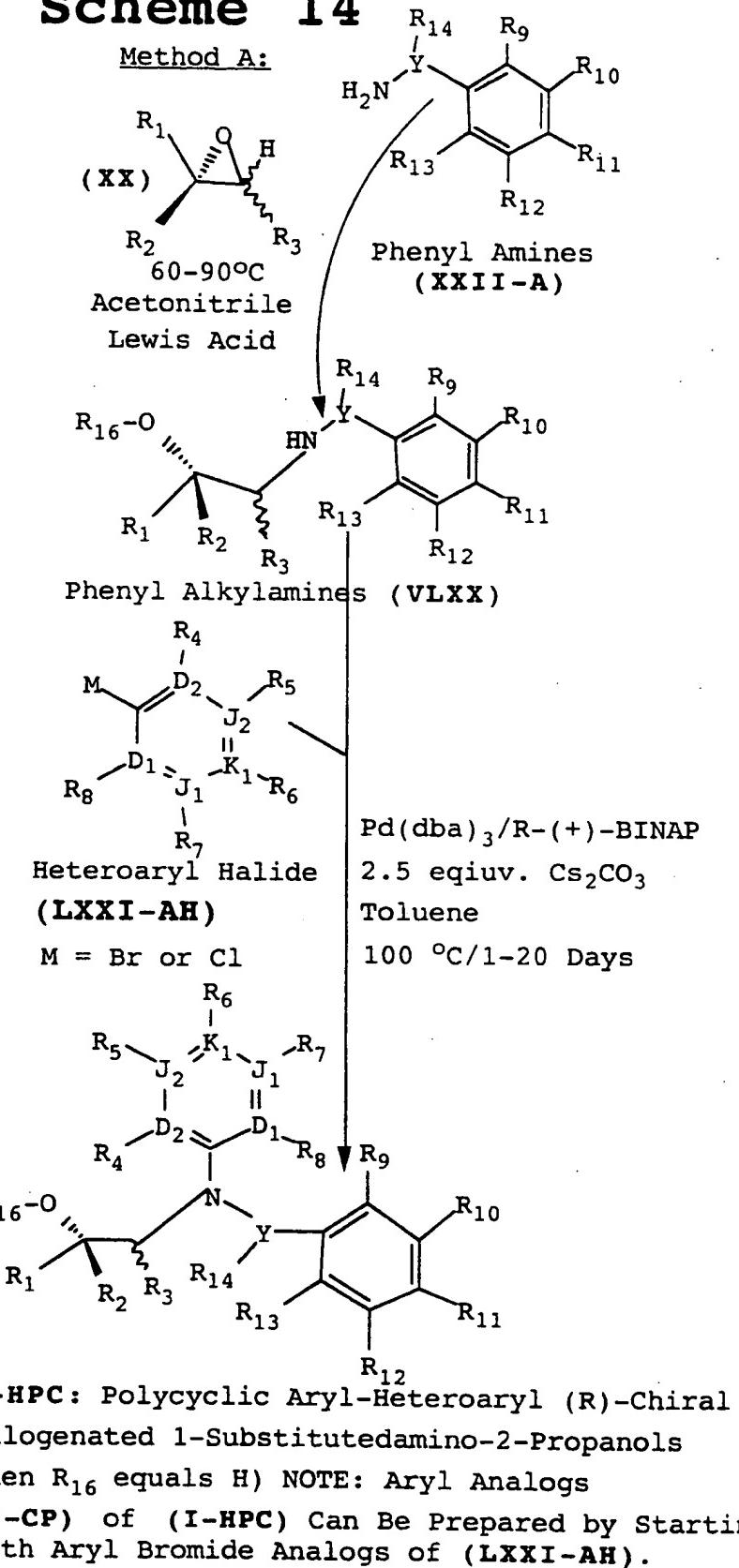
## Scheme 12

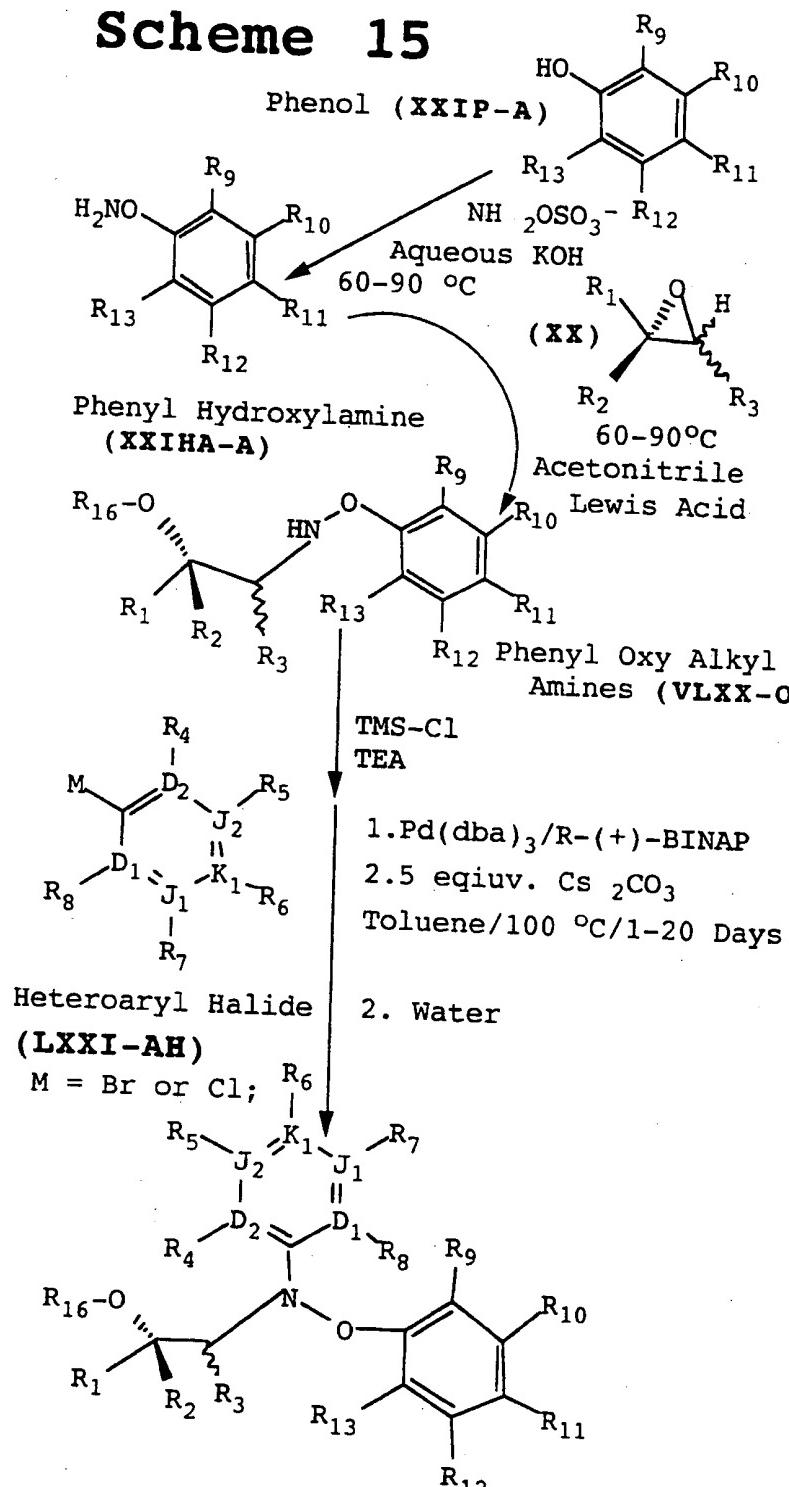


**I-CP:** (Polycyclic 3-Heteroarylaryl Phenyl  
(R)-Chiral Halogenated 1-Substitutedamino-  
2-Propanols; R<sub>16</sub> = H)

### Scheme 13



**Scheme 14**Method A:

**Scheme 15**

**I-HPC:** (Polycyclic Heteroaryl-Aryl Phenyl (R)-Chiral Halogenated 1-Substitutedamino-2-Propanols when  $R_{16} = \text{H}$  and  $\gamma = \text{O}$ ) NOTE: Diaryl (I-CP) and Diheteroaryl (I-HP) Analogs Can Be Prepared by Using Aryl Bromide and Heteroaryl-OH, respectively.

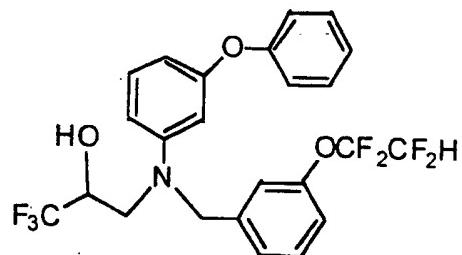
The following examples are provided to illustrate the present invention and are not intended to limit the scope thereof. Without further elaboration, it is believed that one skilled in the art can, using the preceding descriptions, utilize

- 5 the present invention to its fullest extent. Therefore the following preferred specific embodiments are to be construed as merely illustrative and not limitative of the remainder of the disclosure in any way whatsoever. Compounds containing multiple variations of the structural modifications illustrated in the preceding schemes or the following Examples are also contemplated. Those  
10 skilled in the art will readily understand that known variations of the conditions and processes of the following preparative procedures can be used to prepare these compounds.

- One skilled in the art may use these generic methods to prepare the following specific examples, which have been or may be properly characterized  
15 by  $^1\text{H}$  NMR and mass spectrometry. These compounds also may be formed in vivo.

- The following examples contain detailed descriptions of the methods of preparation of compounds of Formula V-H. These detailed descriptions fall within the scope and are presented for illustrative purposes only and are not  
20 intended as a restriction on the scope of the invention. All parts are by weight and temperatures are Degrees centigrade unless otherwise indicated.

## EXAMPLE 1



5

**(2R,S)-3-[(3-phenoxyphenyl)[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol**

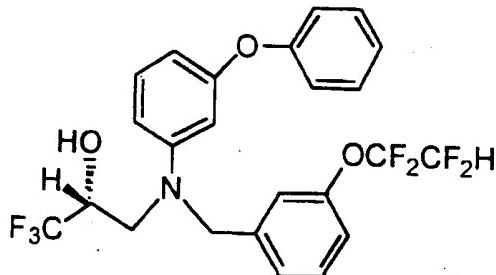
- EX-1A)** To a solution of 3-(1,1,2,2-tetrafluoroethoxy)toluene (50 g, 0.24 mol) and 10 *N*-bromosuccinimide (42.75 g, 0.24 mol) in 100 mL of carbon tetrachloride under nitrogen was added 2,2'-azobisisobutyronitrile (0.71 g, 0.004 mol). The resultant mixture was refluxed for 2 h, then cooled to room temperature and quenched with 300 mL of water. The organic layer was collected, washed with water and brine, dried over MgSO<sub>4</sub>, and concentrated *in vacuo* to give 66.0 g (96%) of the desired 15 crude 3-(1,1,2,2-tetrafluoroethoxy)bromomethylbenzene product as a yellow oil. <sup>1</sup>H NMR indicates that this oil is a mixture of products: 7% dibrominated, 67% monobrominated, and 20% starting material. The crude product was used without further purification. ESMS *m/z* = 287 [M+H]<sup>+</sup>.

- EX-1B)** The crude product (56 g, 0.14 mol) from EX-1A in 200 mL of cyclohexane was added dropwise under nitrogen to a solution of 3-phenoxyaniline (89 g, 0.480 mol) in 500 mL of cyclohexane. The reaction mixture was refluxed overnight, then cooled to room temperature and diluted with water and diethyl ether. The layers were separated, and the aqueous layer was extracted with

diethyl ether. The combined organic layers were dried over MgSO<sub>4</sub> and concentrated *in vacuo* to give a dark oil. The crude product was purified by column chromatography on silica gel eluting with 1:4 ethyl acetate in hexane to afford 44.96 g (83%) of the desired *N*-(3-phenoxyphenyl)-[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amine product as a yellow oil. ESMS *m/z* = 5 392 [M+H]<sup>+</sup>.

To a mixture of the amine product (15.0 g, 0.038 mol) from EX-1B and 1,1,1-trifluoro-2,3-epoxypropane (8.58 g, 0.077 mol, TCI) was added a suspension of 10 ytterbium (III) trifluoromethanesulfonate (2.37 g, 0.0031 mol) in 15 mL of acetonitrile. The resulting mixture was heated at 50 °C in a sealed glass vial for 1.5 h. The reaction mixture was cooled to room temperature then diluted with water and ethyl acetate and extracted. The organic layers were combined, dried over MgSO<sub>4</sub>, and concentrated *in vacuo*. The crude product was purified by 15 column chromatography on silica gel eluting with 1:4 ethyl acetate in hexane to afford 12.03 g (62%) of the desired (2*RS*)-3-[(3-phenoxyphenyl)[[3-(1,1,2,2-tetrafluoroethoxy) phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol product as a yellow oil. Anal. calcd. for C<sub>24</sub>H<sub>20</sub>F<sub>7</sub>NO<sub>3</sub>: C, 57.26; H, 4.00; N, 2.78. Found: C, 56.96; H, 4.35; N, 2.69. HRMS calcd. 504.1410 [M+H]<sup>+</sup>, found: 504.1431. 20 <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.28 (m, 4H), 7.14 (t, 1H), 7.07, (m, 3H), 7.00 (s, 1H), 6.94 (d, 2H), 6.46 (dd, 1H), 6.38 (dd, 1H), 6.35 (t, 1H), 5.84 (t, 1H), 4.60 (t, 2H), 4.36 (m, 1H), 3.82 (d, 1H), 3.48 (m, 1H), 2.51 (s, 1H). <sup>19</sup>F NMR (CDCl<sub>3</sub>) δ -79.0 (s, 3F), -88.21 (d, 2F), -137.05 (dd, 2F).

## EXAMPLE 2

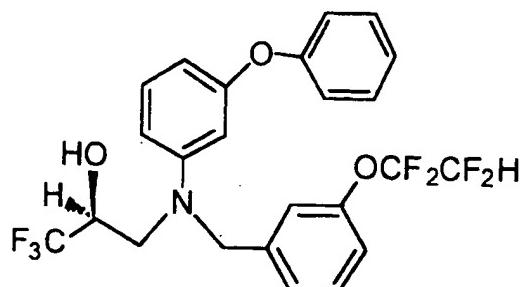


5

**(2*R*)-3-[(3-phenoxyphenyl)][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol**

On a Chiralpak AD HPLC column, (2*RS*)-3-[(3-phenoxyphenyl)][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol (12.2 g, 0.024 mol) from EX-1 was purified by chiral chromatography to give 1.4 g (0.003 mol, 12%) of (2*R*)-3-[(3-phenoxyphenyl)][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol as a light yellow oil. Chiral purification was accomplished by eluting with 1:9 isopropanol in heptane at 1.0 mL/min with 250 nm UV detection. The product eluted at 8.43 min.  $[\alpha]_{589} = +16.8.0$  (c 0.125 g/dL, CH<sub>3</sub>CN),  $[\alpha]_{365} = +84.0$  (c 0.125, CH<sub>3</sub>CN). Anal. calcd. for C<sub>24</sub>H<sub>20</sub>F<sub>7</sub>NO<sub>3</sub>: C, 57.26; H, 4.00; N, 2.78. Found: C, 56.96; H, 4.35; N, 2.69. HRMS calcd.: 504.1410 [M+H]<sup>+</sup>, found: 504.1388. <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.28 (m, 4H), 7.14 (t, 1H), 7.07, (m, 3H), 7.00 (s, 1H), 6.94 (d, 2H), 6.46 (dd, 1H), 6.38 (dd, 1H), 6.35 (t, 1H), 5.84 (t, 1H), 4.60 (t, 2H), 4.36 (m, 1H), 3.82 (d, 1H), 3.48 (m, 1H), 2.51 (s, 1H). <sup>19</sup>F NMR (CDCl<sub>3</sub>) δ -79.0 (s, 3F), -88.21 (d, 2F), -137.05 (dd, 2F).

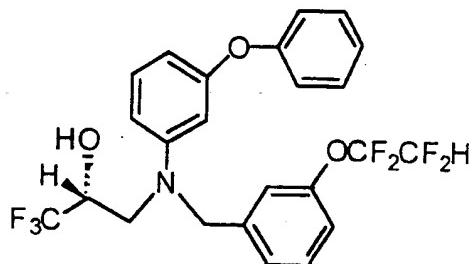
## EXAMPLE 3



(2S)-3-[(3-phenoxyphenyl)][[3-(1,1,2,2-tetrafluoroethoxy)  
5 phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol

On a Chiraldak AD HPLC column, (2RS)-3-[(3-phenoxyphenyl)][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol (12.2 g, 0.024 mol) from EX-1 was purified by chiral chromatography to give 10.5 g (0.021 mol, 10 86%) of (2S)-3-[(3-phenoxyphenyl)][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol as a light yellow oil. Chiral purification was accomplished by eluting with 1:9 isopropanol in heptane at 1.0 mL/min with 250 nm UV detection. The product eluted at 6.36 min.  $[\alpha]_{589} = -17.0$  (c 0.265 g/dL, CH<sub>3</sub>CN),  $[\alpha]_{365} = -85.7$  (c 0.265, CH<sub>3</sub>CN). Anal. calcd. For 15 C<sub>24</sub>H<sub>20</sub>F<sub>7</sub>NO<sub>3</sub>: C, 57.26; H, 4.00; N, 2.78. Found: C, 56.96; H, 4.35; N, 2.69. HRMS calcd.: 504.1410 [M+H]<sup>+</sup>, found: 504.1431. <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.28 (m, 4H), 7.14 (t, 1H), 7.07, (m, 3H), 7.00 (s, 1H), 6.94 (d, 2H), 6.46 (dd, 1H), 6.38 (dd, 1H), 6.35 (t, 1H), 5.84 (t, 1H), 4.60 (t, 2H), 4.36 (m, 1H), 3.82 (d, 1H), 3.48 (m, 1H), 2.51 (s, 1H). <sup>19</sup>F NMR (CDCl<sub>3</sub>) δ -79.0 (s, 3F), -88.21 (d, 2F), -20 137.05 (dd, 2F).

## EXAMPLE 4



5                   (2*R*)-3-[(3-phenoxyphenyl)][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol

Using a procedure adopted from H.C.Brown et al. (*J. Org. Chem.* **60**, 41-46, (1995)), *R*-(+)-1,1,1-trifluoro-2,3-epoxypropane was prepared beginning with the transfer of (+)-*B*-chlorodiisopinocampheylborane ((+)-DIP-Cl, 1.2 kg, 3.74 mol) to a 5 L three neck flask containing 5 L of ether under nitrogen. Anhydrous ether (5 L) was added, and the mixture was stirred until the solids dissolved and the temperature equilibrated to 0 °C. Then 3-bromotrifluoroacetone (326 mL, 3.14 mol) was added, and the reaction was stirred for 72 h while maintaining the temperature between -4 and +5 °C. The reaction was followed by <sup>19</sup>F NMR by removing an aliquot (20 µL), quenching with anhydrous methanol (0.6 mL), and referencing to external D<sub>2</sub>O. The reduction was 68 % complete after 48 h. The ether was removed under vacuum (100 torr to 0.1 torr), leaving a pale, viscous oil. A 5 L 3-neck flask equipped with stirrer, dropping funnel, and short-path distillation head with chilled receiver was charged with 50% (w/w) aqueous NaOH and heated to 40 °C. With external heat removed, the quenched reduction mixture was added dropwise to the aqueous NaOH, with the rate controlled to maintain the pot temperature below 65 °C. The product epoxide formed immediately, distilling over with a head temperature of 32-42 °C. A yellow-

orange solid byproduct was broken up by stirring and some foaming was observed. When the distillation was complete, 145 g (43%) of the desired *R*(+)-1,1,1-trifluoro-2,3-epoxy-propane product was obtained as a clear, colorless oil.  $^1\text{H}$  NMR ( $\text{C}_6\text{D}_6$ )  $\delta$  2.50 (m, 1H,  $\text{CF}_3\text{CH}$ ), 2.15 (dd, 1H,  $J = 2.10, 5.01$  Hz),

- 5      1.75 (m, 1H).  $^{19}\text{F}$  NMR ( $\text{C}_6\text{D}_6$ )  $\delta$  -75.4 (d,  $J = 4.7$  Hz). Chiral GC/MS analysis was performed on the corresponding diethylamine adduct using a gamma cyclodextrin column (Supelco gammadex120 G-cyclodextrin fused silica): 4 drops of the epoxide, *R*(+)-1,1,1-trifluoro-2,3-epoxypropane, and 4 drops of diethylamine were heated briefly in a sealed vial, cooled, diluted with methyl *t*-butyl ether, and analyzed. Found: two gc peaks: 10.97 min and 11.11 min (ratio 10      1:230; 99% ee), where the *R*-product predominated. MS calcd. for  $\text{C}_7\text{H}_{14}\text{F}_3\text{NO}$ :  $m/z = 186 [\text{M}+\text{H}]^+$ , found: 186, for both gc peaks. In contrast, the diethylamine adduct obtained with the TCI trifluoromethyl-oxirane (lot OGH01) from EX-1, gave 2 peaks with identical MS signals  $m/z = 186$ . 10.96 min and 11.12 min (ratio 15      8.5:1; 79% ee), where the *S*-product predominated.

To a mixture *N*-(3-phenoxyphenyl)-[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]-amine from EX-1B (1.48 g, 0.0038 mol) and *R*(+)-1,1,1-trifluoro-2,3-epoxypropane (0.64 g, 0.0057 mol) was added a suspension of ytterbium (III) 20      trifluoro-methanesulfonate (0.23 g, 0.0004 mol) in 1.5 mL of acetonitrile. The resulting mixture was heated at 50 °C in a sealed glass tube for 1.5 h. The reaction mixture was cooled to room temperature then diluted with water and ethyl acetate and extracted. The organic layers were combined, dried over  $\text{MgSO}_4$ , and concentrated *in vacuo*. The crude product was purified by column 25      chromatography on silica gel eluting with 1:4 ethyl acetate in hexane to afford 1.2 g (63%) of the desired (2*R*)-3-[*(3*-phenoxyphenyl)-[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol product as a

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pure yellow oil (>96% ee by chiral HPLC analysis), which was identical in all respects to EX-2. Anal. calcd. for C<sub>24</sub>H<sub>20</sub>F<sub>7</sub>NO<sub>3</sub>: C, 57.26; H, 4.00; N, 2.78.

found: C, 56.96; H, 4.35; N, 2.69. HRMS calcd.: 504.1410 [M+H]<sup>+</sup>, found:

504.1431. <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.28 (m, 4H), 7.14 (t, 1H), 7.07, (m, 3H), 7.00 (s,

5 1H), 6.94 (d, 2H), 6.46 (dd, 1H), 6.38 (dd, 1H), 6.35 (t, 1H), 5.84 (t, 1H), 4.60 (t,

2H), 4.36 (m, 1H), 3.82 (d, 1H), 3.48 (m, 1H), 2.51 (s, 1H). <sup>19</sup>F NMR (CDCl<sub>3</sub>)

δ -79.0 (s, 3F), -88.21 (d, 2F), -137.05 (dd, 2F).

Additional examples can be prepared by one skilled in the art using similar

10 methods and commercially available epoxides. For example, 3-[(3-phenoxyphenyl)][[3-(trifluoromethoxy)phenyl]methyl]amino]-1-chloro-2-propanols can be prepared from the reaction of *N*-(3-phenoxyphenyl)-[[3-(trifluoromethoxy)phenyl]methyl]amine with either (*R*)-epichlorohydrin or (*S*)-epichlorohydrin, as illustrated in Example Table 1.

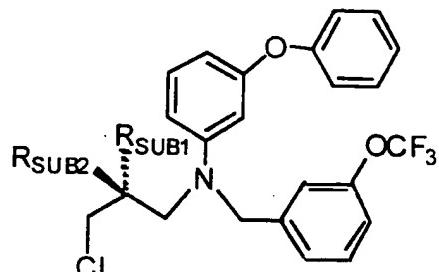
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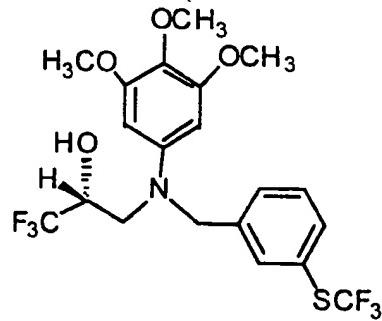
Example Table 1. 3-[*(3-phenoxyphenyl)*][*[3-(trifluoromethoxy)phenyl]methyl*]amino]-1-chloro-2-propanols.



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>R<sub>SUB2</sub></u>	<u>Calculated Mass [M+H]<sup>+</sup></u>	<u>Observed Mass [M+H]<sup>+</sup></u>
5	OH	H	452.1240	452.1245
6	H	OH	452.1240	452.1259

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### EXAMPLE 7



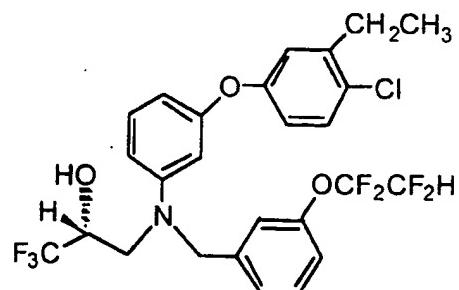
10      (*2R*)-3-[*(3,4,5-trimethoxyphenyl)*][*[3-(trifluoromethylthio)phenyl]methyl*]-  
amino]-1,1,1-trifluoro-2-propanol

EX-45A) To a 1,2-dichloroethane (12 mL) solution of 3,4,5-trimethoxyaniline (0.80 g, 4.4 mmol) was added (3-trifluoromethylthio)benzaldehyde (0.90 g, 4.4 mmol), NaB(OAc)<sub>3</sub>H (1.20 g, 5.66 mmol) and acetic acid (0.26 mL, 4.5 mmol). The cloudy solution was stirred at room temperature for 1 h. The reaction

mixture was poured into water and extracted with dichloromethane. The organic layer was washed with saturated NaHCO<sub>3</sub> and brine, dried (MgSO<sub>4</sub>) and evaporated to give 1.58 g (96%) of the desired *N*-(3,4,5-trimethoxyphenyl)[[3-trifluoromethylthiophenyl]methyl]amine product as an off-white solid. MS: *m/z* 5 = 373.8 [M+H]<sup>+</sup>.

To an acetonitrile (3.2 mL) solution of amine (1.20 g, 3.2 mmol) from EX-45A was added *R*-(+)-1,1,1-trifluoro-2,3-epoxypropane (0.55 mL, 6.4 mmol) from EX-4 and Yb(OTf)<sub>3</sub> (0.40 g, 0.64 mmol). The cloudy solution was stirred in a sealed 10 flask at 50 °C for 18 h. The cooled reaction mixture was diluted with diethyl ether and washed with water and brine. The organic layer was dried (MgSO<sub>4</sub>) and evaporated to an oil. Purification by flash column chromatography on silica gel eluting with 20% ethyl acetate in hexane gave an oil which was triturated with hexanes to give a white solid. The precipitate was isolated by filtration and dried 15 *in vacuo* to give 0.82 g (53 %) of the desired (2*R*)-3-[(3,4,5-trimethoxyphenyl)[[3-(trifluoromethylthio)phenyl] methyl]-amino]-1,1,1-trifluoro-2-propanol product as a white solid, m.p. 88.9-89.1 °C (95% ee by chiral HPLC). Anal. calcd. for C<sub>20</sub>H<sub>21</sub>NO<sub>4</sub>SF<sub>6</sub>: C, 49.48; H, 4.36; N, 2.89. Found: C, 49.29; H, 4.21; N, 2.81. HRMS calcd.: 486.1174 [M+H]<sup>+</sup>, found: 486.1158. <sup>1</sup>H NMR (C<sub>6</sub>D<sub>6</sub>) δ 3.10 (d, 20 1H), 3.18 (dd, 1H), 3.32 (s, 6H), 3.53 (d, 1H), 3.64 (s, 3H), 4.01 (m, 1H), 4.21 (dd, 2H), 5.70 (s, 2H), 6.80 (t, 1H), 6.94 (d, 1H), 7.23 (d, 1H), 7.37 (s, 1H). [α]<sub>589</sub> = +26.8 (c 1.099 g/dL, CHCl<sub>3</sub>).

## EXAMPLE 8



- 5        **(2R)-3-[{3-(4-chloro-3-ethylphenoxy)phenyl}][{3-(1,1,2,2-tetrafluoroethoxy)phenyl}methyl]amino]-1,1,1-trifluoro-2-propanol**

**EX-8A)** To a solution of 1,3-dinitrobenzene (16.8 g, 0.1 mol) and 4-chloro-3-ethylphenol (15.6 g, 0.1 mol) in 200 mL of dimethylsulfoxide was added cesium carbonate (65 g, 0.2 mol). The reaction mixture was heated at 100 °C under nitrogen overnight then cooled to room temperature. The reaction mixture was filtered through celite then rinsed with diethyl ether and a small amount of water. The filtrate was extracted several times with diethyl ether. The organic layers were combined, washed with water and brine, dried over MgSO<sub>4</sub>, and concentrated *in vacuo* to give 21.8 g (78%) of the desired 3-(4-chloro-3-ethylphenoxy)-1-nitrobenzene product as a dark orange oil, which was greater than 90% pure by reverse phase HPLC analysis. HRMS calcd. for C<sub>14</sub>H<sub>12</sub>ClNO<sub>3</sub>: 295.0849 [M+NH<sub>4</sub>]<sup>+</sup>, found 295.0862.

**20 EX-8B)** To a solution of 3-(4-chloro-3-ethylphenoxy)-1-nitrobenzene (10 g 0.036 mol) from **EX-8A** in 400 mL of glacial acetic acid and 1 mL of water was added zinc metal (20 g, 0.305 mol) at room temperature, and the resultant mixture was stirred for 1 h. The reaction mixture was filtered through celite. The filtrate was neutralized with ammonium hydroxide and extracted with diethyl ether. The

organic layer was washed with water and brine, dried over MgSO<sub>4</sub>, and concentrated *in vacuo* to give 10 g (100%) of the desired 3-(4-chloro-3-ethylphenoxy)aniline product as a dark orange oil, which was greater than 90% pure by reverse phase HPLC analysis. HRMS calcd. for C<sub>14</sub>H<sub>14</sub>CINO: 248.0842

5 [M+H]<sup>+</sup>, found: 248.0833.

**EX-8C)** To a solution of 3-(4-chloro-3-ethylphenoxy)aniline (2.0 g, 8.1 mmol) from **EX-8B** and 3-(1,1,2,2-tetrafluoroethoxy)benzaldehyde (1.6 g, 7.3 mmol) in 30 mL of dichloroethane was added sodium triacetoxyborohydride (2.0 g, 9.7 mmol) and glacial acetic acid (0.51 mL, 8.9 mmol). The reaction mixture was stirred at room temperature for 1 h then quenched with water and extracted with diethyl ether. The organic layer was washed with water and brine, dried over MgSO<sub>4</sub>, and concentrated *in vacuo* to give 3.5 g (95%) of the desired N-[(4-chloro-3-ethylphenoxy)phenyl]-3-[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amine product as a brown oil, which was greater than 90% pure by reverse phase HPLC analysis. HRMS calcd. for C<sub>23</sub>H<sub>20</sub>ClF<sub>4</sub>NO<sub>2</sub>: 454.1197 [M+H]<sup>+</sup>, found: 454.1220.

A solution of N-[(4-chloro-3-ethylphenoxy)phenyl]-3-[[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amine (1.8 g, 4.0 mmol) from **EX-8C**, *R*-(+)-1,1,1-trifluoro-2,3-epoxy-propane (0.64 g, 0.0057 mol) from **EX-4**, and ytterbium (III) trifluoromethanesulfonate (0.25 g, 0.4 mmol) in 1.5 mL of acetonitrile was heated at 40 °C in a sealed glass tube for 1 h. The reaction mixture was cooled to room temperature then diluted with water and diethyl ether and extracted. The ether layer was washed with water and brine, dried over MgSO<sub>4</sub>, and concentrated *in vacuo*. The crude product was purified by column

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chromatography on silica gel eluting with 1:7:0.01 of ethyl acetate:hexane:ammonium hydroxide to afford 1.5 g (66%) of the desired (2*R*)-3-[[3-(4-chloro-3-ethylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-tri-fluoro-2-propanol product as a yellow oil (96% ee by 5 chiral HPLC analysis).  $[\alpha]_{589}^{25} = +36.9$  (c 1.044g%, CHCl<sub>3</sub>).  $[\alpha]_{365}^{25} = +189.7$  (c 1.044g%, CHCl<sub>3</sub>). The refractive index @ 25 °C is 1.5275. Anal. calcd. for C<sub>26</sub>H<sub>23</sub>ClF<sub>7</sub>NO<sub>3</sub>: C, 55.18; H, 4.10; N, 2.48. found: C, 54.92; H, 4.05; N, 2.33. HRMS calcd.: 566.1330 [M+H]<sup>+</sup>, found: 566.1323. <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.30 (t, 1H), 7.20 (d, 1H), 7.15 (t, 1H), 7.08 (t, 2H), 7.00 (s, 1H), 6.86 (d, 1H), 10 6.68 (dd, 1H), 6.48 (dd, 1H), 6.36 (dd, 1H), 6.34 (t, 1H), 5.81 (tt, 1H), 4.62 (s, 2H), 4.32 (m, 1H), 3.84 (dd, 1H), 3.55 (dd, 1H), 2.67 (q, 2H), 2.45 (bs, 1H), 1.17 (t, 3H). <sup>19</sup>F NMR (CDCl<sub>3</sub>) δ -79.22 (d, 3F), -88.57 (m, 2F), -137.16 (dt, 2F).

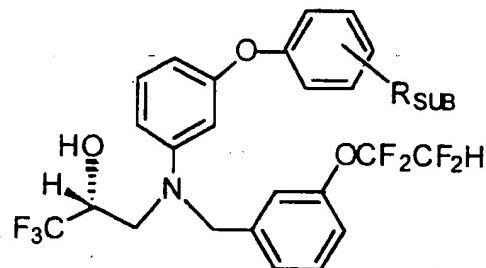
Additional examples of (2*R*)-3-[[3-(substituted-phenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanols and 15 (2*R*)-3-[[3-(4-chloro-3-ethylphenoxy)phenyl][[3-substituted-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanols can be prepared by one skilled in the art using similar methods, as shown in Example Tables 2 and 3, respectively.

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Example Table 2. (2*R*)-3-[[3-(Substituted-phenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanols.



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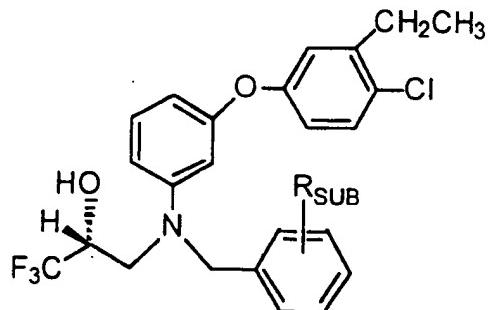
<u>Ex. No.</u>	<u>R<sub>SUB</sub></u>	<u>Calculated Mass [M+H]<sup>+</sup></u>	<u>Observed Mass [M+H]<sup>+</sup></u>
9	4-methyl	518.1566	518.1587
10	3-isopropyl	546.1879	546.1900
11	3-ethyl	532.1723	532.1713

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Example Table 3. (*2R*)-3-[[3-(4-Chloro-3-ethylphenoxy)phenyl][[3-substituted-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanols.



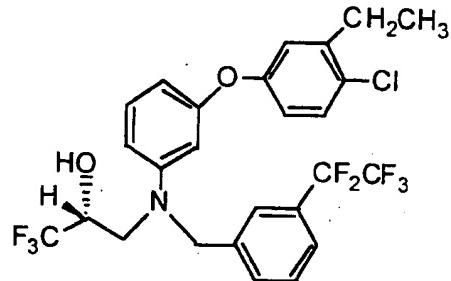
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<u>Ex.</u>	<u>R<sub>SUB</sub></u>	<u>Calculated</u>	<u>Observed</u>
<u>No.</u>		<u>Mass</u> <u>[M+H]<sup>+</sup></u>	<u>Mass</u> <u>[M+H]<sup>+</sup></u>
12	3-trifluoromethoxy	534.1271	534.1309
13	3-trifluoromethyl, 4-fluoro	536.1228	536.1265
14	2-fluoro, 4-trifluoromethyl	536.1228	536.1241
15	2-trifluoromethyl, 4-fluoro	536.1228	536.1245
16	2-fluoro, 5-trifluoromethyl	536.1228	536.1252
17	2-fluoro, 6-trifluoromethyl	536.1228	536.1199

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## EXAMPLE 18



(2*R*)-3-[{3-(4-chloro-3-ethylphenoxy)phenyl}[[3-(1,1,1,2,2-pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol

**EX-18A)** Sodium pentafluoroethyl propionate (8.4 g, 50 mmol) and 3-iodotoluene (5.5 g, 25 mmol) were dissolved in anhydrous DMF (300 mL) under nitrogen. CuI (9.5 g, 50 mmol) was added, and the mixture was heated to 160 °C under nitrogen for 4 h, at which time a 15 mL fraction of a mixture of DMF and 3-pentafluoroethyl toluene was collected. The distillate was diluted with Et<sub>2</sub>O and was washed with brine. The ether layer was dried over MgSO<sub>4</sub>, filtered and concentrated *in vacuo* to give 5.25 g (55%) of the desired 3-pentafluoroethyl-toluene product as a colorless oil. <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.36 (m, 4H), 2.40 (s, 3H). <sup>19</sup>F NMR (CDCl<sub>3</sub>) δ -85.2 (s, 3F), -115.2 (s, 2F).

**EX-18B)** The 3-pentafluoroethyl-toluene (2.9 g, 13.8 mmol) product from **EX-18A** and *N*-bromosuccinimide (2.5 g, 13.8 mmol) were dissolved in CCl<sub>4</sub> (25 mL). AIBN (50 mg, 0.3 mmol) was added, and the mixture was refluxed for 3.5 h under N<sub>2</sub>. The reaction mixture was cooled to room temperature and diluted with water. The layers were separated, and the organic layer was washed with brine, dried with anhydrous MgSO<sub>4</sub>, filtered, and concentrated *in vacuo* to give 3.4 g

(87%) of a colorless oil. The  $^1\text{H}$  NMR spectrum indicated that the crude product contained 3-pentafluoroethyl-benzylbromide (70%), the benzyl dibromide (10%) and pentafluoroethyl toluene (20%).  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.60 (m, 2H), 7.50 (m, 2H), 4.50 (s, 2H).  $^{19}\text{F}$  NMR ( $\text{CDCl}_3$ )  $\delta$  -85.1 (s, 3F), -115.4 (s, 2F).

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**EX-18C)** A solution of 3-(4-chloro-3-ethylphenoxy)aniline (1.7 g, 6.9 mmol) was prepared in cyclohexane (13 mL). A solution of crude 3-pentafluoroethyl benzylbromide (1 g, 3.5 mmol) product from **EX-18B** in cyclohexane (10 mL) was added dropwise under nitrogen over 3 min. The reaction mixture was refluxed under  $\text{N}_2$  for 24 h and then was cooled to room temperature. The mixture was diluted with  $\text{Et}_2\text{O}$  and saturated aqueous  $\text{NaHCO}_3$ . The layers were separated, and the aqueous layer was extracted with  $\text{Et}_2\text{O}$ . The organic layer was washed with brine, dried with anhydrous  $\text{MgSO}_4$ , filtered and concentrated *in vacuo*. The residue was purified by chromatography on silica gel eluting with hexanes in ethyl acetate (95:5) which gave 0.56 g (35%) of the desired *N*-[3-(4-chloro-3-ethylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]amine product as a brown oil.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.53 (m, 4H), 7.27 (d, 1H), 7.15 (t, 1H), 6.93 (d, 1H), 6.77 (dd, 1H), 6.41 (tt, 2H), 6.30 (t, 1H), 4.41 (s, 2H), 2.73 (q, 2H), 1.23 (t, 3H).  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  158.6, 156.1, 143.4, 141.3, 140.2, 131.3, 130.7, 130.4, 129.4, 128.1, 120.4, 117.8, 108.8, 103.9, 48.5, 27.5, 14.1.  $^{19}\text{F}$  NMR ( $\text{CDCl}_3$ )  $\delta$  -85.1 (s, 3F), -115.2 (s, 2F). HRMS calcd. for  $\text{C}_{23}\text{H}_{19}\text{ClF}_5\text{NO}^+$ : 456.1154 [ $\text{M}+\text{H}]^+$ , found: 456.1164.

The *N*-[3-(4-chloro-3-ethylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]-methyl]amine (0.4 g, 0.88 mmol) product of **EX-18C** was dissolved in anhydrous

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acetonitrile (1.5 mL). *R*-(+)-1,1,1-trifluoro-2,3-epoxypropane (0.22 g, 1.94 mmol)

and Yb(OTf)<sub>3</sub> (22 mg, 0.035 mmol) were added, and the reaction mixture was

stirred under N<sub>2</sub> at 45 °C in a sealed glass tube for 15 h. The reaction mixture

was then cooled to room temperature and diluted with Et<sub>2</sub>O and saturated

5 aqueous NaHCO<sub>3</sub>. The layers were separated and the aqueous layer was

extracted with Et<sub>2</sub>O. The ether layers were combined, washed with brine, dried

with anhydrous Na<sub>2</sub>SO<sub>4</sub>, filtered, and concentrated *in vacuo*. The viscous oil

was adsorbed onto silica gel and purified by column chromatography eluting with

hexanes in ethyl acetate (95:5) which gave 0.32 g (64%) of the desired (2R)-3-[(4-

10 chloro-3-ethylphenoxy)phenyl[[3-(pentafluoroethyl)phenyl]-methyl]amino]-

1,1,1-trifluoro-2-propanol product as a viscous, colorless oil. <sup>1</sup>H NMR (CDCl<sub>3</sub>)

δ 7.47 (m, 4H), 7.23 (m, 3H), 6.90 (d, 1H), 6.72 (dd, 1H), 6.52 (d, 1H), 6.42 (m,

2H), 4.73 (s, 2H), 4.39 (m, 1H), 3.91 (dd, 1H), 3.58 (m, 2H), 2.73 (q, 2H), 2.57

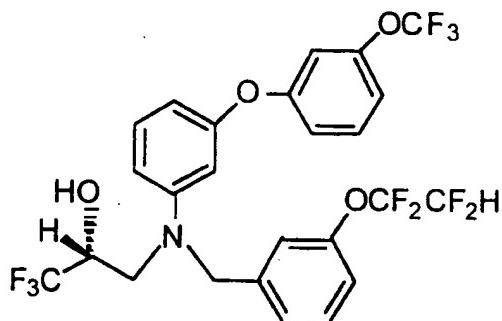
(s, 1H), 1.22 (t, 3H). <sup>19</sup>F NMR (CDCl<sub>3</sub>) δ -79.2 (s, 3F), -84.9 (s, 3F), -115.2 (s,

15 2F). HRMS calcd. for C<sub>26</sub>H<sub>22</sub>ClF<sub>8</sub>NO<sub>2</sub>: 568.1290 [M+H]<sup>+</sup>, found: 568.1296.

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## EXAMPLE 19



(2*R*)-3-[{[3-(3-trifluoromethoxyphenoxy)phenyl][{[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl}amino]-1,1,1-trifluoro-2-propanol

**EX-19A)** To a solution of 1,3-dinitrobenzene (4.5 g, 0.03 mol) and 3-trifluoromethoxy-phenol (4.8 g, 0.03 mol) in 54 mL of dimethylsulfoxide was added cesium carbonate (21.8 g, 0.07 mol). The reaction mixture was heated at 100 °C under nitrogen overnight then cooled to room temperature. The reaction mixture was diluted with water and extracted with diethyl ether several times. The organic layers were combined, washed with 1 N HCl and water, dried over MgSO<sub>4</sub>, and concentrated *in vacuo*. The crude product was purified by column chromatography on silica gel eluting with 1:9 ethyl acetate in hexane to afford 3.0 g (38%) of the desired 3-(3-trifluoro-methoxyphenoxy)nitrobenzene product as a yellow-orange liquid which was 85% pure by reverse phase HPLC analysis. This material was carried on without further purification.

**EX-19B)** To a solution of 3-(3-trifluoromethoxyphenoxy)nitrobenzene (3.0 g, 0.01 mol) from EX-19A in 100 mL of glacial acetic acid was added zinc metal (6.6 g, 0.1 mol) at room temperature, and the resultant mixture was stirred for 1 h. The reaction mixture was filtered through celite. The filtrate was neutralized with ammonium hydroxide and extracted with diethyl ether then ethyl acetate. The

combined organic layers were dried over MgSO<sub>4</sub> and concentrated *in vacuo*. The crude product was purified by column chromatography on silica gel eluting with 1:9 ethyl acetate in hexane to afford 1.2 g (44%) of the desired 3-(3-trifluoromethoxyphenoxy)aniline product as a yellow oil which was 98% pure by 5 reverse phase HPLC analysis. Anal. calcd. for C<sub>13</sub>H<sub>10</sub>F<sub>3</sub>NO<sub>2</sub>: C, 58.00; H, 3.74; N, 5.20. found: C, 57.68; H, 3.57; N, 5.14. HRMS calcd.: 270.0742 [M+H]<sup>+</sup>, found: 270.0767.

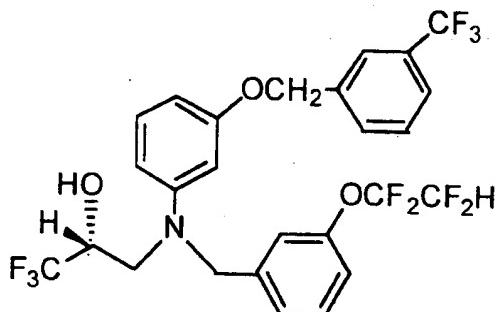
EX-19C) To a solution of 3-(3-trifluoromethoxyphenoxy)aniline (1.0 g, 3.7 mmol) from EX-19B and 3-(1,1,2,2-tetrafluoroethoxy)benzaldehyde (0.83 g, 3.7 mmol) in 18.5 mL of dichloroethane was added sodium triacetoxyborohydride (1.0 g, 4.7 mmol) and glacial acetic acid (0.25 mL, 4.3 mmol). The reaction mixture was stirred at room temperature overnight then quenched with saturated aqueous sodium bicarbonate and extracted with methylene chloride. The organic 15 layer was dried over MgSO<sub>4</sub> and concentrated *in vacuo* to give 1.8 g (100%) of the desired [3-(3-trifluoromethoxy-phenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl] amine product as a yellow oil, which was greater than 90% pure by reverse phase HPLC analysis. HRMS calcd. for C<sub>22</sub>H<sub>16</sub>F<sub>7</sub>NO<sub>3</sub>: 476.1097 [M+H]<sup>+</sup>, found: 476.1069. This material was carried 20 on to the next step without further purification.

A solution of [3-(3-trifluoromethoxyphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amine (1.8 g, 3.7 mmol) from EX-19C, R-(+)-1,1,1-trifluoro-2,3-epoxy-propane (0.57 g, 5.2 mmol), and ytterbium (III) 25 trifluoromethanesulfonate (0.24 g, 0.38 mmol) in 2.0 mL of acetonitrile was heated at 40 °C in a sealed glass tube overnight. At this time reverse phase HPLC analysis indicated that the reaction was only 50% complete. Additional

ytterbium (III) trifluoromethanesulfonate and *R*-(+)-1,1,1-trifluoro-2,3-epoxypropane (0.26 g, 2.3 mmol) were added to the reaction mixture and again heated at 40 °C in a sealed glass tube for 48 h. The reaction mixture was cooled to room temperature then diluted with water and methylene chloride and extracted.

- 5 The organic layer was washed with brine, dried over MgSO<sub>4</sub>, and concentrated *in vacuo*. The crude product was purified by reverse phase HPLC eluting with 30% to 90% acetonitrile in water to afford 1.25 g (23%) of the desired (2*R*)-3-[[3-(3-trifluoromethoxyphenoxy) phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol product as yellow-brown oil (90% ee  
10 by chiral HPLC analysis). HRMS calcd. for C<sub>25</sub>H<sub>19</sub>F<sub>10</sub>NO<sub>4</sub>: 588.1233 [M+H]<sup>+</sup>, found: 588.1225. <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.35-7.18 (m, 3H), 7.12 (t, 2H), 7.01 (s, 1H), 6.93 (d, 1H), 6.85 (d, 1H), 6.82 (s, 1H), 6.56 (dd, 1H), 6.47 (dd, 1H), 6.41 (s, 1H), 5.88 (t, 1H), 4.66 (s, 2H), 4.35 (m, 1H), 3.86 (d, 1H), 3.59 (dd, 1H), 2.02 (s, 1H). <sup>19</sup>F NMR (CDCl<sub>3</sub>) δ -58.31 (s, 3F), -79.24 (d, 3F), -15 88.57 (m, 2F), -137.16 (dt, 2F).

## EXAMPLE 20



5

(*2R*)-3-[[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl][3-[(trifluoromethyl)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol

- EX-20A)** To a solution of 3-aminophenol (4.91 g, 45.0 mmol) and 3-(1,1,2,2-tetrafluoroethoxy)benzaldehyde (10.0 g, 45.0 mmol) in 100 mL of 1,2-dichloroethane was added sodium triacetoxyborohydride (14.28 g 67.5 mmol) and glacial acetic acid (2.7 mL, 47.3 mmol). The reaction mixture was stirred at room temperature for 6 h then quenched with water and extracted with dichloromethane. The organic layer was washed with saturated aqueous sodium bicarbonate, dried over MgSO<sub>4</sub>, and concentrated *in vacuo* to give 11.82 g (83%) of the desired 3-[[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]phenol product as a dark orange oil. <sup>1</sup>H NMR (acetone-*d*<sub>6</sub>) δ 7.01-7.38 (m, 5H), 6.26-6.44 (m, 3H), 6.08 (t, 1H), 5.88 (tt, 1H), 4.34 (s, 2H).
- EX-20B)** A solution of 3-[[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]phenol (5.1 g, 16.2 mmol) from EX-20A, *R*-(+)-1,1,1-trifluoro-2,3-epoxypropane (1.5 mL, 17.4 mmol), and ytterbium trifluoromethanesulfonate (1.0 g, 10 mol%) in 10 mL of acetonitrile was heated at 50 °C in a sealed glass tube for 4 h. The

reaction mixture was cooled to room temperature, then diluted with water and diethyl ether and extracted. The ether layer was washed with saturated aqueous sodium bicarbonate and brine, dried over MgSO<sub>4</sub>, and concentrated *in vacuo* to give 5.64 g (81%) of the desired (2*R*)-3-[[[3-(1,1,2,2-tetrafluoroethoxy]phenyl)methyl][3,3,3-trifluoro-2-hydroxy-propyl)amino]phenol product as a

- 5 yellow oil. <sup>1</sup>H NMR (acetone-*d*<sub>6</sub>) δ 7.41 (t, 1H), 7.23 (d, 1H), 7.16-7.20 (m, 2H), 6.97 (t, 1H), 6.42 (tt, 1H), 6.18-6.24 (m, 3H), 4.77 (s, 2H), 4.43-4.48 (m, 1H), 3.58 (dd, 1H), 3.39 (dd, 1H).

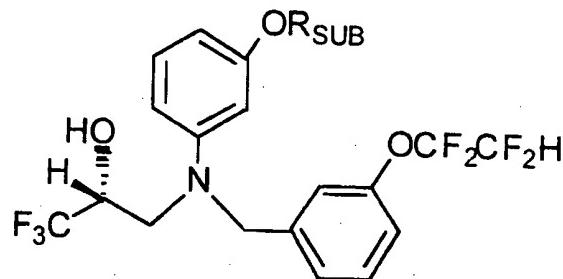
10. To a solution of (2*R*)-3-[[[3-(1,1,2,2-tetrafluoroethoxy]phenyl)methyl][3,3,3-trifluoro-2-hydroxypropyl)amino]phenol (100 mg, 0.23 mmol) from EX-20B and 3-trifluoromethylbenzyl bromide (70.0 mg, 0.27 mmol) in 2.5 mL of acetone was added cesium carbonate (100 mg, 0.31 mmol). The reaction mixture was heated at 60 °C for 18 h then cooled to room temperature. The reaction mixture was  
15 filtered through celite, and the filtrate was concentrated. The residue was purified by reverse phase HPLC eluting with 50% to 90% acetonitrile in water to afford 63.3 mg (45%) of the desired (2*R*)-3-[[[3-(1,1,2,2-tetrafluoroethoxy)phenyl)methyl][3-[3-(trifluoro-methyl)phenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol product as an orange oil.  
20 HRMS calcd. for C<sub>26</sub>H<sub>21</sub>F<sub>10</sub>NO<sub>3</sub>: 586.1440 [M+H]<sup>+</sup>, found: 586.1419. <sup>1</sup>H NMR (acetone-*d*<sub>6</sub>) δ 7.61-7.82 (m, 4H), 7.41 (t, 1H), 7.25 (d, 1H), 7.10-7.21 (m, 3H), 6.34-6.67 (m, 4H), 5.73 (d, 1H), 5.19 (s, 2H), 4.82 (s, 2H), 4.34-4.48 (m, 1H), 3.99 (dd, 1H), 3.68 (dd, 1H).

146

Additional examples of (2*R*)-3-[[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]-[3-[[aryl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanols are prepared by one skilled in the art using similar methods, as shown in Example Table 4.

5

Example Table 4. (2*R*)-3-[[[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl][3-[[aryl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanols.

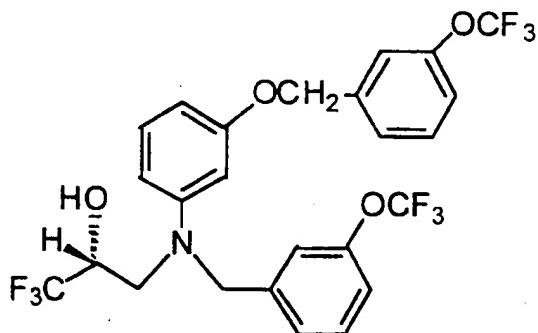


10

<u>Ex. No.</u>	<u>R<sub>SUB</sub></u>	<u>Calculated Mass [M+H]<sup>+</sup></u>	<u>Observed Mass [M+H]<sup>+</sup></u>
21	3,5-difluorobenzyl	554.1378	554.1352
22	3-trifluoromethoxybenzyl	602.1389	602.1390
23	3-isopropyl	470.1566	464.1601

15

## EXAMPLE 24

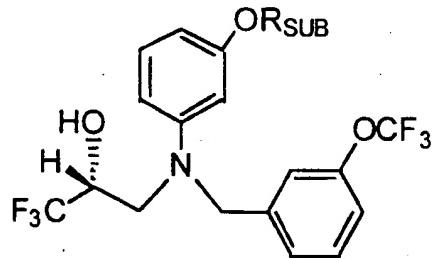


5                             (2*R*)-3-[[3-[[3-(trifluoromethoxy)phenyl]methoxy]phenyl][[3-(trifluoromethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol

(2*R*)-3-[[3-[[3-(trifluoromethoxy)phenyl]methoxy]phenyl][[3-(trifluoromethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol can be prepared by one skilled in the art using similar methods starting from 3-(trifluoromethoxy)-benzaldehyde. HRMS calcd. for C<sub>25</sub>H<sub>20</sub>F<sub>9</sub>NO<sub>4</sub>: 570.1327 [M+H]<sup>+</sup>, found: 570.1325. <sup>1</sup>H NMR (acetone-d<sub>6</sub>) δ 7.43 (t, 1H), 7.32 (d, 1H), 7.18-7.23 (m, 2H), 7.01-7.16 (m, 3H), 6.92-7.00 (m, 1H), 6.38-6.45 (m, 3H), 5.12 (s, 2H), 4.81 (s, 2H), 4.41-4.53 (m, 1H), 3.98 (dd, 1H), 3.63 (dd, 1H).

15                             Additional examples of (2*R*)-3-[[3-[[aryl]methoxy]phenyl][[3-(trifluoromethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanols can be prepared by one skilled in the art using similar methods, as shown in Example Table 5.

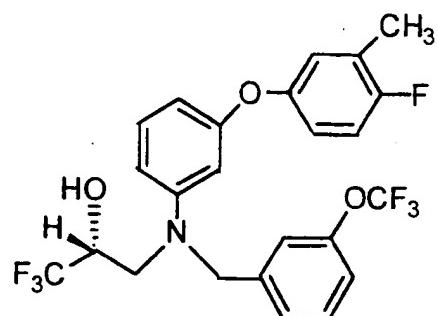
Example Table 5. (*2R*)-3-[[3-[[aryl]methoxy]phenyl][[3-(trifluoromethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanols.



5

<u>Ex. No.</u>	<u>R<sub>SUB</sub></u>	<u>Calculated Mass [M+H]<sup>+</sup></u>	<u>Observed Mass [M+H]<sup>+</sup></u>
25	4-trifluoromethoxybenzyl	570.1327	570.1299
26	3,5-di(trifluoromethyl)benzyl	622.1252	622.1252
27	3-trifluoromethylbenzyl	554.1378	554.1369
28	3,5-difluorobenzyl	522.1315	522.1259
29	benzyl	486.1504	486.1504
30	isopropyl	438.1504	438.1509
31	cyclohexylmethyl	492.1973	492.1973
32	cyclopentyl	464.1660	464.1641

## EXAMPLE 33



5        **(2R)-3-[(3-(4-fluoro-3-methylphenoxy)phenyl)[[3-(trifluoromethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol**

**EX-33A)** To a solution of 3-bromoaniline (5.7 mL, 52.6 mmol) and 3-trifluoromethoxybenzaldehyde (10.0 g, 52.6 mmol) in 135 mL of dichloroethane was  
10 added sodium triacetoxyborohydride (14.5 g, 68.4 mmol) and glacial acetic acid (3.1 mL, 54.7 mmol). The reaction was stirred at room temperature for 2 h, then quenched with water and extracted with dichloromethane. The organic layer was washed with saturated aqueous sodium bicarbonate, dried over  $\text{MgSO}_4$ , and concentrated *in vacuo*. The crude product was purified by column chromatography on silica gel eluting with 1:9 ethyl acetate in hexane to give 14.3 g (78%) of the desired of *N*-(3-bromophenyl)[[3-(trifluoromethoxy)phenyl]methyl]amine product as a dark brown oil. HRMS calcd. for  $\text{C}_{14}\text{H}_{11}\text{BrF}_3\text{NO}$ : 346.0055  $[\text{M}+\text{H}]^+$ , found: 346.0052.

20      **EX-33B)** A solution of of *N*-(3-bromophenyl)[[3-(trifluoromethoxy)phenyl]methyl]-amine (10.0 g, 28.9 mmol) from EX-33A, *R*-  
(+)-1,1,1-trifluoro-2,3-epoxypropane (4.2 g, 37.6 mmol), and ytterbium (III) trifluoromethanesulfonate (1.79 g, 2.89 mmol) in 27 mL of acetonitrile was heated

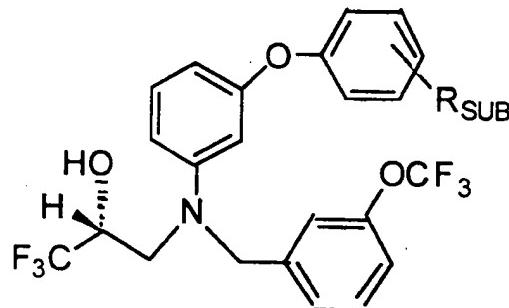
at 50 °C in a sealed glass tube overnight. The reaction mixture was cooled to room temperature and filtered through celite. The crude product was purified by column chromatography on silica gel eluting with 2:3 dichloromethane in hexane to afford 11.9 g (90%) of the desired (2*R*)-3-[[3-(3-bromophenyl)][[3-(trifluoromethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol product as a brown oil (98% ee by chiral HPLC analysis). HRMS calcd. for C<sub>17</sub>H<sub>14</sub>BrF<sub>6</sub>NO<sub>2</sub>: 458.0190 [M+H]<sup>+</sup>, found: 458.0197.

A suspension of 4-fluoro-3-methylphenol (98.0 μL, 0.88 mmol) and cesium carbonate (319.5 mg, 0.98 mmol) in 1 mL of *N,N*-dimethylacetamide was preheated at 60 °C for 5 minutes. To this solution was added 4 mL of a stock solution containing (2*R*)-3-[[3-(3-bromophenyl)][[3-(trifluoromethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol (200 mg, 0.437 mmol) from EX-33B, 1-naphthoic acid (164 mg, 0.95 mmol), copper(I) trifluoromethansulfonate benzene complex (21.8 mg, 0.0434 mmol), 4 Å sieves (105 mg), and 4 mL of toluene. The reaction mixture was stirred at 105 °C for 3 weeks and 2 days. During that time, additional cesium carbonate and catalyst were added (a spatula tip of each) to the reaction three different times. The reaction was cooled to room temperature, filtered through celite, and the solvent was evaporated. The residue was purified by reverse phase HPLC eluting with 35% to 90% acetonitrile in water to afford 50.5 mg (23%) of the desired (2*R*)-3-[[3-(4-fluoro-3-methylphenoxy)phenyl][[3-(trifluoromethoxy)phenyl] methyl]amino]-1,1,1-trifluoro-2-propanol product as an orange oil. HRMS calcd. for C<sub>24</sub>H<sub>20</sub>F<sub>7</sub>NO<sub>3</sub>: 504.1410 [M+H]<sup>+</sup>, found: 504.1389. <sup>1</sup>H NMR (acetone-d<sub>6</sub>) δ 7.44 (t, 1H), 7.24 (d, 1H), 7.08-7.21 (m, 3H), 6.98 (t, 1H), 6.75-6.85 (m, 1H), 6.68-6.74 (m, 1H), 6.53 (d, 1H), 6.21-6.34 (m, 2H), 4.79 (t, 2H), 4.46-4.53 (m, 1H), 3.95 (dd, 1H), 2.61-2.72 (m, 1H), 2.20 (s, 3H).

Additional examples (2*R*)-3-[[*(aryloxy)phenyl*][[3-(trifluoromethoxy)phenyl] methyl]amino]-1,1,1-trifluoro-2-propanols can be prepared by one skilled in the art using similar methods, as shown in Example Table 6.

5

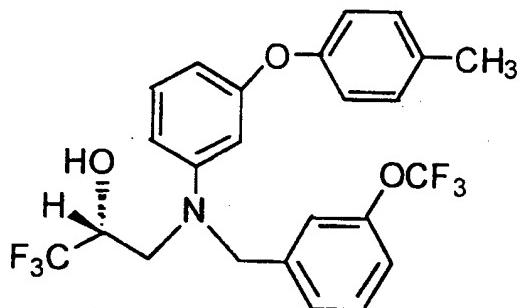
Example Table 6. (2*R*)-3-[[*(aryloxy)phenyl*][[3-(trifluoromethoxy)phenyl] methyl]amino]-1,1,1-trifluoro-2-propanols.



10

<u>Ex. No.</u>	<u>R<sub>SUB</sub></u>	<u>Calculated Mass [M+H]<sup>+</sup></u>	<u>Observed Mass [M+H]<sup>+</sup></u>
34	3-trifluoromethoxy	556.1170	556.1180
35	3-isopropyl	514.1817	514.1823
36	3,4-dimethyl	500.1660	500.1654
37	4-chloro-3-methyl	520.1114	520.1129
38	3- <i>tert</i> -butyl	528.1973	528.1942
39	3,4-dichloro	540.0568	540.0567
40	3,4-(CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> )-	526.1817	526.1788

**EXAMPLE 41**



**(2*R*)-3-[[3-(4-methylphenoxy)phenyl][[3-(trifluoromethoxy)phenyl]**

5 methyl]amino]- 1,1,1-trifluoro-2-propanol

**EX-41A)** To a solution of *p*-cresol (5.76 g, 0.053 mol) and 1,3-dinitrobenzene (8.97 g, 0.053 mol) in 100 mL of dimethylsulfoxide was added cesium carbonate (43.4 g, 0.133 mol). The reaction mixture was heated at 100 °C for 18 h, then 10 cooled to room temperature, quenched with water, and extracted with diethyl ether. The organic layers were combined, washed with 0.1 N HCl and water, dried over MgSO<sub>4</sub> and concentrated *in vacuo*. The crude product was purified by column chromatography on silica gel eluting with 1:4 ethyl acetate in hexane to afford 8.0 g (66%) of the desired 3-(4-methylphenoxy)nitrobenzene product as a 15 yellow oil. <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.83 (s, 1H), 7.64 (t, 1H), 7.32 (d, 1H), 7.18 (d, 1H), 7.09 (d, 2H), 6.8 (d, 2H), 2.20 (s, 1H).

**EX-41B)** A solution of 3-(4-methylphenoxy)nitrobenzene (8.0 g, 0.035 mol) from EX-41A in 25 mL of ethanol under nitrogen was charged with 10% palladium on carbon (0.80 g). The resulting mixture was hydrogenated for 4 h at room temperature and 45 psi. The reaction mixture was filtered through celite and concentrated *in vacuo* to give 6.7 g (96%) of the desired 3-(4-methylphenoxy)aniline product as a yellow oil. ESMS *m/z* = 200

[M+H]<sup>+</sup> confirmed the desired C<sub>13</sub>H<sub>13</sub>NO product and the complete consumption of starting material.

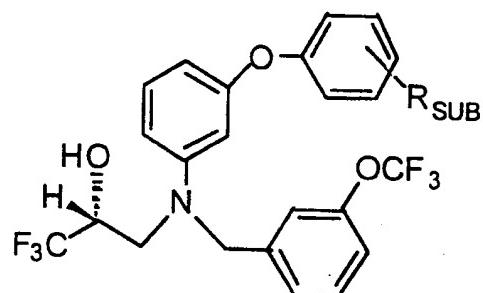
- EX-41C) To a solution of 3-(4-methylphenoxy)aniline (2.91 g, 0.015 mol) from EX-41B, and 3-(trifluoromethoxy)benzaldehyde (3.24 g, 0.015 mol) in 50 mL dichloroethane was added sodium triacetoxyborohydride (4.02 g, 0.019 mol) and glacial acetic acid (0.99 g, 0.017 mol). The reaction mixture was stirred at room temperature for 18 h, then quenched with saturated aqueous sodium bicarbonate and extracted with dichloromethane. The organic layers were combined, dried over MgSO<sub>4</sub> and concentrated *in vacuo* to give 5.38 g (91%) of the desired *N*-[3-(4-methylphenoxy)-phenyl]-[[3-(trifluoromethoxy)phenyl]methyl]amine product as an orange oil. ESMS *m/z* = 374 [M+H]<sup>+</sup> confirmed the desired C<sub>21</sub>H<sub>18</sub>NO<sub>2</sub>F<sub>3</sub> product and the complete consumption of starting material.
- To a mixture of *N*-[3-(4-methylphenoxy)phenyl]-[[3-(trifluoromethoxy)phenyl]methyl]amine(1.3 g, 0.0035 mol) from EX-41C and *R*-(+)-1,1,1-trifluoro-2,3-epoxypropane (0.59 g, 0.0053 mol) was added a suspension of ytterbium (III) trifluoromethanesulfonate (0.22 g, 0.0004 mol) in 1.3 mL of acetonitrile. The resulting mixture was heated at 50 °C in a sealed glass tube for 18 h. The reaction mixture was cooled to room temperature, then diluted with water and extracted with ethyl acetate. The crude product was purified by column chromatography on silica gel eluting with 1:4 ethyl acetate in hexane to afford 1.03 g (61%) of the desired (2*R*)-3-[3-(4-methyl-phenoxy)phenyl][[3-(trifluoromethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propa-nol product as a pure yellow oil. Anal. calcd. for C<sub>24</sub>H<sub>21</sub>F<sub>6</sub>NO<sub>3</sub>: C, 59.38; H, 4.36; N, 2.89. Found: C, 59.17; H, 4.62; N, 2.80. HRMS calcd.: 486.1504 [M+H]<sup>+</sup>, found: 486.1513. <sup>1</sup>H NMR (C<sub>6</sub>D<sub>6</sub>) δ 6.82 (m, 8H), 6.60 (dd, 1H), 6.42 (dd, 1H), 6.38 (s, 1H), 6.18 (dd, 1H), 4.00 (s,

2H), 3.63 (m, 1H), 3.40 (d, 1H), 3.02 (m, 1H), 2.00 (s, 3H), 1.40 (d, 1H).  $^{19}\text{F}$

NMR ( $\text{C}_6\text{D}_6$ )  $\delta$  -57.98 (s, 3F), -78.50 (s, 3F).

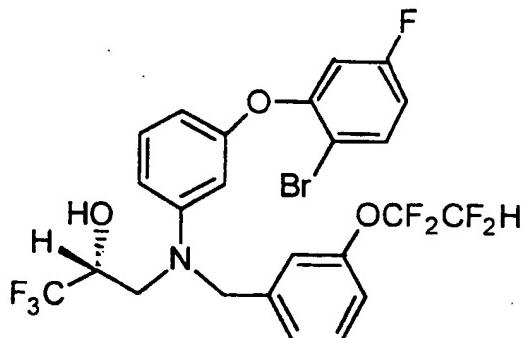
Additional examples of  $(2R)$ -3-[3-(substituted-phenoxy)phenyl]-[3-(trifluoro-methoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanols can be prepared by one skilled in the art using similar methods, as shown in Example 5 Table 7.

Example Table 7.  $(2R)$ - 3-[3-(substituted-phenoxy)phenyl][[3-(trifluoromethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanols. 10



<u>Ex. No.</u>	<u>R<sub>SUB</sub></u>	<u>Calculated Mass [M+H]<sup>+</sup></u>	<u>Observed Mass [M+H]<sup>+</sup></u>
42	4-fluoro	490.1253	490.1238

## EXAMPLE 43



5

**(2*R*)-3-[[3-(2-bromo-5-fluorophenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol**

**EX-43A)** To a solution of 3-aminophenol (5 g, 46 mmol), 1-bromo-2,4-difluorobenzene (10 g, 50 mmol) and Cs<sub>2</sub>CO<sub>3</sub> (16 g, 50 mmol) in 25 mL of dimethylformamide was added solid (CuOTf)<sub>2</sub>C<sub>6</sub>H<sub>6</sub> (100 mg), and the mixture was stirred under nitrogen at 85 °C for 22 h, at which time HPLC analysis indicated that the reaction had gone to completion and formed two products. The DMF was removed under reduced pressure. The residue was diluted with ether and filtered through a celite pad. The pad was washed with ether and a small amount of water. The mixture was extracted with ether several times. The combined ether layers were washed with water and brine, then dried over MgSO<sub>4</sub>. The dried organic layer was evaporated to give 10.2 g (80%) of the desired product, which consisted of a 11:1 ratio of 3-(2-bromo-5-fluoro-phenoxy)aniline and 3-(4-bromo-3-fluorophenoxy)aniline. The crude product was purified by flash column chromatography on silica gel eluting with 1:7:0.01 of ethyl acetate:hexane:ammonium hydroxide to give 8.8 g (68%) of the desired product as

a yellow oil, which was a 25:1 ratio of 3-(2-bromo-5-fluorophenoxy)aniline and 3-(4-bromo-3-fluorophenoxy)aniline. HRMS calcd. for C<sub>12</sub>H<sub>9</sub>NOFBr: 281.9930 [M+H]<sup>+</sup>, found: 281.9950.

- 5      **EX-43B)** The 3-(2-bromo-5-fluorophenoxy)aniline (1.39 g, 4.95 mmol) product from **EX-43A** and 3-(1,1,2,2-tetrafluoroethoxy)benzaldehyde (1.0 g, 4.5 mmol) were dissolved in 15 mL of dichloroethane and acetic acid (0.30 mL, 5.4 mmol), then solid NaBH(OAc)<sub>3</sub> (1.26 g, 5.9 mmol) was added. The mixture was stirred at room temperature for 1 h, then quenched with water and extracted with ether.
- 10     The ether layer was washed with water and brine, then dried over MgSO<sub>4</sub>, and evaporated to give 2.1 g (97%) of crude product, which was purified by flash column chromatography on silica gel eluting with 1:7:0.01 of ethyl acetate:hexane:ammonium hydroxide to give 2.0 g (91%) of the desired 3-[3-(2-bromo-5-fluoro-phenoxy)phenyl][[3-(1,1,2,2-tetrafluoro-
- 15     ethoxy)phenyl]methyl]amine product, as a light yellow oil, > 90% pure by HPLC analysis. HRMS calcd. for C<sub>21</sub>H<sub>15</sub>NO<sub>2</sub>BrF<sub>5</sub>: 488.0285 [M+H]<sup>+</sup>, found: 488.0269.

20     The 3-[3-(2-bromo-5-fluorophenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]-methyl]amine (0.5 g, 2.0 mmol) product from **EX-43B** and *R*-(+)-1,1,1-trifluoro-2,3-epoxypropane (0.17 g, 2.0 mmol) from **EX-4** were dissolved in 0.5 mL of acetonitrile. Ytterbium (III) trifluoromethanesulfonate (0.06 g, 0.1 mmol) was added, and the stirred solution was warmed to 40 °C for 1 h, at which time HPLC analysis indicated that no secondary amine starting material remained. The reaction was quenched with water and extracted with ether. The ether layer was washed with water and brine, then dried over MgSO<sub>4</sub>. The crude product was

purified by flash column chromatography on silica gel eluting with 1:7:0.01 of ethyl acetate:hexane:ammonium hydroxide to give 0.4 g (67%) of the desired *R*-  
(+)-3-[[3-(2-bromo-5-fluorophenoxy)phenyl][[3-(1,1,2,2-

5 tetrafluoroethoxy)phenyl]methyl] amino]-1,1,1-trifluoro-2-propanol product as a light yellow oil (> 84% ee by chiral HPLC analysis). Anal. calcd. for  
 $C_{24}H_{18}BrF_8NO_3$ : C, 48.02; H, 3.02; N, 2.33. found: C, 48.07; H, 3.14; N, 2.31.

HRMS calcd.: 600.0420  $[M+H]^+$ , found: 600.0386.  $^1H$  NMR ( $CDCl_3$ )  $\delta$  7.50 (dd, 1H), 7.30 (t, 1H), 7.18 (t, 1H), 7.07 (t, 2H), 6.99 (s, 1H), 6.70 (dt, 1H), 6.56 (dd, 1H), 6.52 (dd, 1H), 6.38 (dd, 1H), 6.32 (m, 1H), 5.87 (tt, 1H), 4.65 (d, 2H).

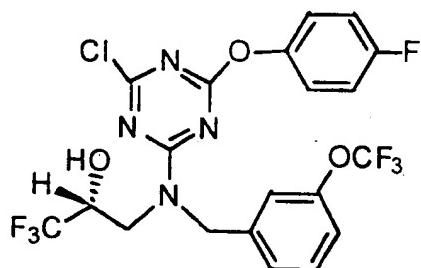
10 NOE difference spectra confirmed that the isolated material was the indicated *N*-[3-(2-bromo-5-fluorophenoxy)phenyl]-3-aminopropanol product.  $^{19}F$  NMR ( $CDCl_3$ )  $\delta$  -79.24 (d, 3F), -88.57 (m, 2F), -112.04 (q, 1H), -137.16 (dt, 2F).

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## EXAMPLE 44



5           (2*R*)-*N*-[2-chloro-6-(p-fluorophenoxy)-1,3,5-triazin-4-yl]-3-[[[3-(trifluoromethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol

EX-44A) 3-Trifluoromethoxybenzenemethanamine (1.15g, 6 mmol) and *R*-(+)-1,1,1-trifluoro-2,3-epoxypropane (0.67 g, 6 mmol) were combined and stirred at 10 80 °C for 1.5 h. The mixture was cooled to room temperature, and the resulting solid was recrystallized from hot hexanes. The white solid was isolated by vacuum filtration and washed with cold hexanes to give 0.67 g (37%) of pure (2*R*)-3-[[[3-(trifluoro-methoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol.

15           <sup>1</sup>H NMR (CDCl<sub>3</sub>) δ 7.37 (t, 1H), 7.24 (d, 1H), 7.15 (m, 2H), 3.99 (m, 1H), 3.85 (d, 2H), 2.98 (dd, 1H), 2.88 (dd, 1H), 2.79 (s, 1H). <sup>19</sup>F NMR (CDCl<sub>3</sub>) δ -58.19 (s, 3F), -78.88 (s, 3F). HRMS calcd. for C<sub>11</sub>H<sub>11</sub>F<sub>6</sub>NO<sub>2</sub>: 304.0772 [M+H]<sup>+</sup>, found: 304.0794.

EX-44B) To a solution of p-fluorophenol 1.00 g (8.92 mmol) in 30 mL of 20 tetrahydrofuran at 0 °C was added a 60% dispersion of sodium hydride in mineral oil (0.36 g, 8.92 mmol). After 30 min, cyanuric chloride (1.64 g, 8.92 mmol) was added as a heterogeneous mixture in tetrahydrofuran at 0 °C. The reaction mixture was allowed to slowly warm to room temperature. After 14 h, the

mixture was cooled to 0 °C, and a saturated aqueous NH<sub>4</sub>Cl solution was added.

The aqueous solution was extracted with diethyl ether (3 x 50 mL). The

combined ether extracts were washed with brine, dried (MgSO<sub>4</sub>), and

concentrated *in vacuo* to afford 1.34 g (58%) of the desired 2,4-dichloro-6-(4-

5 fluorophenoxy)-1,3,5-triazine product as an off white solid which was taken on  
to the next step without purification. MS *m/z* = 260 [M+H]<sup>+</sup>.

To a stirred solution of aminopropanol from EX-44A (0.100 g, 0.330 mmol) in  
*N,N*-dimethylformamide at 0 °C was added the 2,4-dichloro-(4-fluorophenoxy)-

10 1,3,5-triazine ether product from EX-44B (0.086 g, 0.330 mmol) as a solution in  
*N,N*-di-methylformamide. The reaction mixture was allowed to slowly warm to  
room temperature. After 14 h, the reaction mixture was cooled to 0 °C, and a

saturated aq. NaHCO<sub>3</sub> solution was added. After stirring the reaction mixture for  
30 min at room temperature, the aqueous layer was extracted with ether (3 x 30

15 mL). The combined ether extracts were washed with brine, dried (MgSO<sub>4</sub>), and  
concentrated *in vacuo* to give a yellow oil. The crude residue was purified by  
column chromatography on silica gel eluting with 20 % ethyl acetate in hexanes to  
give 0.075 g (43%) of the desired (2*R*)-*N*-(2-chloro-6-(p-fluorophenoxy)-1,3,5-  
triazin-4-yl]-3-[[[3-(trifluoromethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-

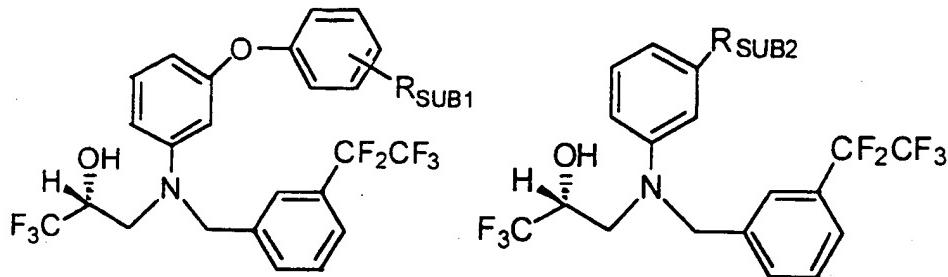
20 propanol product as a pale yellow oil. HRMS calcd. for C<sub>20</sub>H<sub>14</sub>ClF<sub>7</sub>N<sub>4</sub>O<sub>3</sub>:

526.0643 [M]<sup>+</sup>, found: 526.0632. <sup>1</sup>H NMR (C<sub>6</sub>D<sub>6</sub>) δ 6.95 (s, 1H), 6.63 (m,  
14H), 4.74 (d, 1H), 4.37 (d, 1H), 4.16 (d, 1H), 4.00 (d, 2H), 3.73 (m, 1H), 3.48  
(m, 2H), 3.26 (m, 2H), 3.12 (m, 2H).

25 Based on the preceding procedures, additional substituted (2*R*)-3-[(*N*-  
aryl)-[[aryl]methyl]amino]-1,1,1-trifluoro-2-propanols are prepared by one

skilled in the art using similar methods, as shown in Example Table 8. Substituted (3*R*)-4-[*N*-(aryl)-[(aryl)methyl]amino]-1,1,1,2,2-pentafluoro-3-butanols are prepared by one skilled in the art using similar methods, as shown in Example Table 9. Substituted (2*R*)-3-[*N*-(aryl)][(aryl)oxy]amino]-1,1,1-trifluoro-2-propanols are prepared by one skilled in the art using similar methods, as shown in Example Table 10. Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl]amino]-1,1-difluoro-1-chloro-2-propanols are prepared by one skilled in the art using similar methods, as shown in Example Table 11. Substituted (2*R*)-3-[*N,N'*-(diaryl)amino]-1,1,1-trifluoro-2-propanols are prepared by one skilled in the art using similar methods, as shown in Example Table 12.

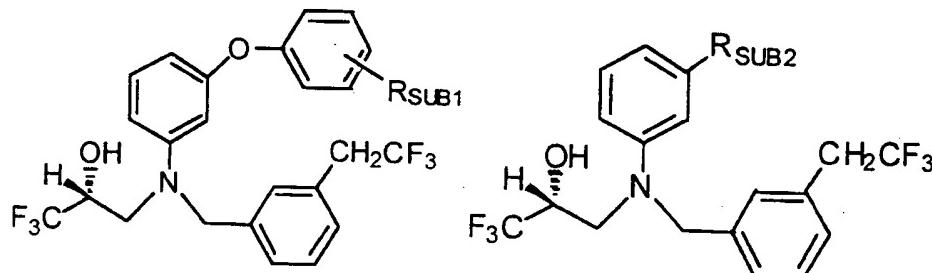
161  
 Example Table 8. Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl]amino]-  
 1,1,1-trifluoro-2-propanols.



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
45	3-isopropyl	69	3-CF <sub>3</sub> O-benzylxy
46	2-Cl, 3-Cl	70	3-CF <sub>3</sub> -benzylxy
47	3-CF <sub>3</sub> O	71	3-F, 5-F-benzylxy
48	4-F	72	cyclohexylmethylenoxy
49	4-CH <sub>3</sub>	73	benzylxy
50	2-F, 5-Br	74	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
51	3-CF <sub>3</sub> CF <sub>2</sub>	75	4-CF <sub>3</sub> O-benzylxy
52	3-CH <sub>3</sub> CH <sub>2</sub>	76	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
53	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	77	isopropoxy
54	3-(CH <sub>3</sub> ) <sub>3</sub> C	78	3-CF <sub>3</sub> -benzyl
55	4-F, 3-CH <sub>3</sub>	79	isopropylthio
56	3-Cl, 4-Cl	80	cyclopentoxy
57	3,4-(CH <sub>2</sub> ) <sub>4</sub>	81	3-Cl-5-pyridinyloxy
58	3-HCF <sub>2</sub> CF <sub>2</sub> O	82	3-CF <sub>3</sub> S-benzylxy
59	3-CHF <sub>2</sub> O	83	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
60	3-(CH <sub>3</sub> ) <sub>2</sub> N	84	2-F, 3-CF <sub>3</sub> -benzylxy
61	3-cyclopropyl	85	3-F, 5-CF <sub>3</sub> -benzylxy
62	3-(2-furyl)	86	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
63	3-CF <sub>3</sub> CF <sub>2</sub>	87	1-phenylethoxy
64	4-NH <sub>2</sub>	88	4-F, 3-CH <sub>3</sub> -benzoyl
65	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	89	3-CF <sub>3</sub> -phenyl

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

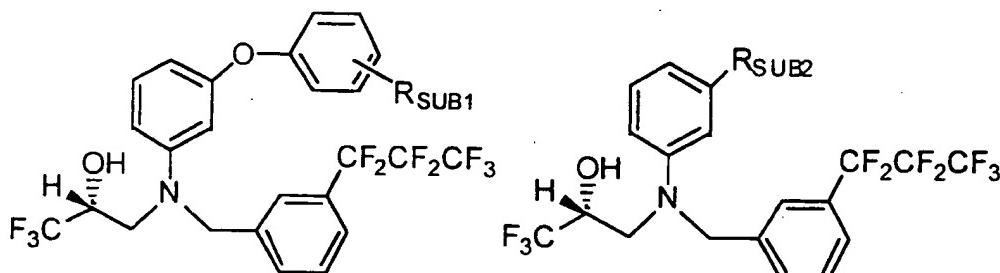
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
66	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	90	4-CH <sub>3</sub> O-phenylamino
67	3-CF <sub>3</sub>	91	cyclopropoxy
68	2-NO <sub>2</sub>	92	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
93	3-isopropyl	117	3-CF <sub>3</sub> O-benzylxy
94	2-Cl, 3-Cl	118	3-CF <sub>3</sub> -benzyloxy
95	3-CF <sub>3</sub> O	119	3-F, 5-F-benzyloxy
96	4-F	120	cyclohexylmethylenoxy
97	4-CH <sub>3</sub>	121	benzyloxy
98	2-F, 5-Br	122	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
99	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	123	4-CF <sub>3</sub> O-benzyloxy
100	3-CH <sub>3</sub> CH <sub>2</sub>	124	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
101	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	125	isopropoxy
102	3-(CH <sub>3</sub> ) <sub>3</sub> C	126	3-CF <sub>3</sub> -benzyl
103	4-F, 3-CH <sub>3</sub>	127	isopropylthio
104	3-Cl, 4-Cl	128	cyclopentoxy
105	3,4-(CH <sub>2</sub> ) <sub>4</sub>	129	3-Cl-5-pyridinyloxy
106	3-HCF <sub>2</sub> CF <sub>2</sub> O	130	3-CF <sub>3</sub> S-benzyloxy
107	3-CHF <sub>2</sub> O	131	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy

Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
108	3-(CH <sub>3</sub> ) <sub>2</sub> N	132	2-F, 3-CF <sub>3</sub> -benzyloxy
109	3-cyclopropyl	133	3-F, 5-CF <sub>3</sub> -benzyloxy
110	3-(2-furyl)	134	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
111	3-CF <sub>3</sub> CF <sub>2</sub>	135	1-phenylethoxy
112	4-NH <sub>2</sub>	136	4-F, 3-CH <sub>3</sub> -benzoyl
113	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	137	3-CF <sub>3</sub> -phenyl
114	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	138	4-CH <sub>3</sub> O-phenylamino
115	3-CF <sub>3</sub>	139	cyclopropoxy
116	2-NO <sub>2</sub>	140	4-NO <sub>2</sub> -phenylthio

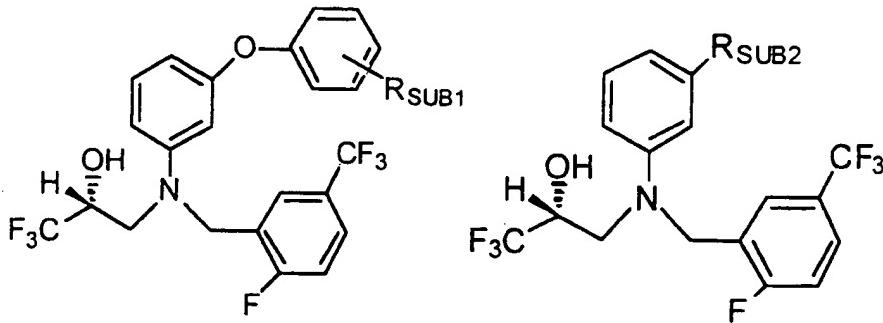


<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
141	3-isopropyl	165	3-CF <sub>3</sub> O-benzyloxy
142	2-Cl, 3-Cl	166	3-CF <sub>3</sub> -benzyloxy
143	3-CF <sub>3</sub> O	167	3-F, 5-F-benzyloxy
144	4-F	168	cyclohexylmethoxy
145	4-CH <sub>3</sub>	169	benzyloxy
146	2-F, 5-Br	170	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
147	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	171	4-CF <sub>3</sub> O-benzyloxy
148	3-CH <sub>3</sub> CH <sub>2</sub>	172	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
149	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	173	isopropoxy
150	3-(CH <sub>3</sub> ) <sub>3</sub> C	174	3-CF <sub>3</sub> -benzyl
151	4-F, 3-CH <sub>3</sub>	175	isopropylthio
152	3-Cl, 4-Cl	176	cyclopentoxyl
153	3,4-(CH <sub>2</sub> ) <sub>4</sub>	177	3-Cl-5-pyridinyloxy
154	3-HCF <sub>2</sub> CF <sub>2</sub> O	178	3-CF <sub>3</sub> S-benzyl
155	3-CHF <sub>2</sub> O	179	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
156	3-(CH <sub>3</sub> ) <sub>2</sub> N	180	2-F, 3-CF <sub>3</sub> -benzyloxy
157	3-cyclopropyl	181	3-F, 5-CF <sub>3</sub> -benzyloxy
158	3-(2-furyl)	182	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyl
159	3-CF <sub>3</sub> CF <sub>2</sub>	183	1-phenylethoxy
160	4-NH <sub>2</sub>	184	4-F, 3-CH <sub>3</sub> -benzoyl
161	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	185	3-CF <sub>3</sub> -phenyl
162	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	186	4-CH <sub>3</sub> O-phenylamino
163	3-CF <sub>3</sub>	187	cyclopropoxy
164	2-NO <sub>2</sub>	188	4-NO <sub>2</sub> -phenylthio

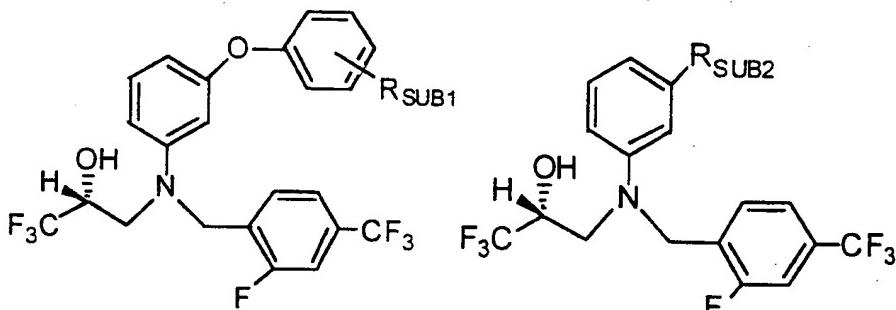
Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
189	3-isopropyl	213	3-CF <sub>3</sub> O-benzylxy
190	2-Cl, 3-Cl	214	3-CF <sub>3</sub> -benzylxy
191	3-CF <sub>3</sub> O	215	3-F, 5-F-benzylxy
192	4-F	216	cyclohexylmethylenoxy
193	4-CH <sub>3</sub>	217	benzylxy
194	2-F, 5-Br	218	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
195	4-Cl, 3-CH <sub>3</sub>	219	4-CF <sub>3</sub> O-benzylxy
196	3-CH <sub>3</sub> CH <sub>2</sub>	220	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
197	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	221	isopropoxy
198	3-(CH <sub>3</sub> ) <sub>3</sub> C	222	3-CF <sub>3</sub> -benzyl
199	4-F, 3-CH <sub>3</sub>	223	isopropylthio
200	3-Cl, 4-Cl	224	cyclopentoxy
201	3,4-(CH <sub>2</sub> ) <sub>4</sub>	225	3-Cl-5-pyridinyloxy
202	3-HCF <sub>2</sub> CF <sub>2</sub> O	226	3-CF <sub>3</sub> S-benzylxy
203	3-CHF <sub>2</sub> O	227	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
204	3-(CH <sub>3</sub> ) <sub>2</sub> N	228	2-F, 3-CF <sub>3</sub> -benzylxy
205	3-cyclopropyl	229	3-F, 5-CF <sub>3</sub> -benzylxy
206	3-(2-furyl)	230	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
207	3-CF <sub>3</sub> CF <sub>2</sub>	231	1-phenylethoxy

**Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.**

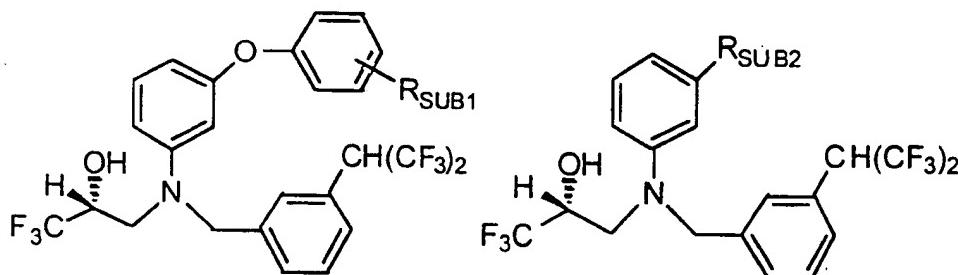
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
208	4-NH <sub>2</sub>	232	4-F, 3-CH <sub>3</sub> -benzoyl
209	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	233	3-CF <sub>3</sub> -phenyl
210	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	234	4-CH <sub>3</sub> O-phenylamino
211	3-CF <sub>3</sub>	235	cyclopropoxy
212	2-NO <sub>2</sub>	236	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
237	3-isopropyl	261	3-CF <sub>3</sub> O-benzyl
238	2-Cl, 3-Cl	262	3-CF <sub>3</sub> -benzyl
239	3-CF <sub>3</sub> O	263	3-F, 5-F-benzyl
240	4-F	264	cyclohexylmethyleneoxy
241	4-CH <sub>3</sub>	265	benzyloxy
242	2-F, 5-Br	266	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyl
243	4-Cl, 3-CH <sub>3</sub>	267	4-CF <sub>3</sub> O-benzyl
244	3-CH <sub>3</sub> CH <sub>2</sub>	268	4-CH <sub>3</sub> CH <sub>2</sub> -benzyl
245	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	269	isopropoxy
246	3-(CH <sub>3</sub> ) <sub>3</sub> C	270	3-CF <sub>3</sub> -benzyl
247	4-F, 3-CH <sub>3</sub>	271	isopropylthio
248	3-Cl, 4-Cl	272	cyclopentoxyl

Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
249	3,4-(CH <sub>2</sub> ) <sub>4</sub>	273	3-Cl-5-pyridinyloxy
250	3-HCF <sub>2</sub> CF <sub>2</sub> O	274	3-CF <sub>3</sub> S-benzyloxy
251	3-CHF <sub>2</sub> O	275	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
252	3-(CH <sub>3</sub> ) <sub>2</sub> N	276	2-F, 3-CF <sub>3</sub> -benzyloxy
253	3-cyclopropyl	277	3-F, 5-CF <sub>3</sub> -benzyloxy
254	3-(2-furyl)	278	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
255	3-CF <sub>3</sub> CF <sub>2</sub>	279	1-phenylethoxy
256	4-NH <sub>2</sub>	280	4-F, 3-CH <sub>3</sub> -benzoyl
257	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	281	3-CF <sub>3</sub> -phenyl
258	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	282	4-CH <sub>3</sub> O-phenylamino
259	3-CF <sub>3</sub>	283	cyclopropoxy
260	2-NO <sub>2</sub>	284	4-NO <sub>2</sub> -phenylthio

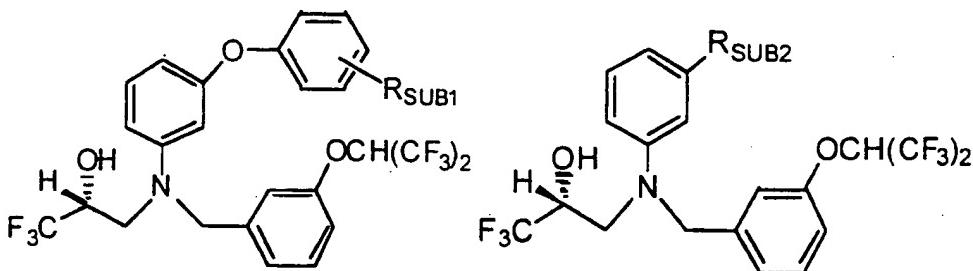


<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
285	3-isopropyl	309	3-CF <sub>3</sub> O-benzyloxy
286	2-Cl, 3-Cl	310	3-CF <sub>3</sub> -benzyloxy
287	3-CF <sub>3</sub> O	311	3-F, 5-F-benzyloxy
288	4-F	312	cyclohexylmethoxymethoxy
289	4-CH <sub>3</sub>	313	benzyloxy

Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
290	2-F, 5-Br	314	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
291	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	315	4-CF <sub>3</sub> O-benzyloxy
292	3-CH <sub>3</sub> CH <sub>2</sub>	316	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
293	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	317	isopropoxy
294	3-(CH <sub>3</sub> ) <sub>3</sub> C	318	3-CF <sub>3</sub> -benzyl
295	4-F, 3-CH <sub>3</sub>	319	isopropylthio
296	3-Cl, 4-Cl	320	cyclopentoxy
297	3,4-(CH <sub>2</sub> ) <sub>4</sub>	321	3-Cl-5-pyridinyloxy
298	3-HCF <sub>2</sub> CF <sub>2</sub> O	322	3-CF <sub>3</sub> S-benzyloxy
299	3-CHF <sub>2</sub> O	323	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
300	3-(CH <sub>3</sub> ) <sub>2</sub> N	324	2-F, 3-CF <sub>3</sub> -benzyloxy
301	3-cyclopropyl	325	3-F, 5-CF <sub>3</sub> -benzyloxy
302	3-(2-furyl)	326	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
303	3-CF <sub>3</sub> CF <sub>2</sub>	327	1-phenylethoxy
304	4-NH <sub>2</sub>	328	4-F, 3-CH <sub>3</sub> -benzoyl
305	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	329	3-CF <sub>3</sub> -phenyl
306	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	330	4-CH <sub>3</sub> O-phenylamino
307	3-CF <sub>3</sub>	331	cyclopropoxy
308	2-NO <sub>2</sub>	332	4-NO <sub>2</sub> -phenylthio

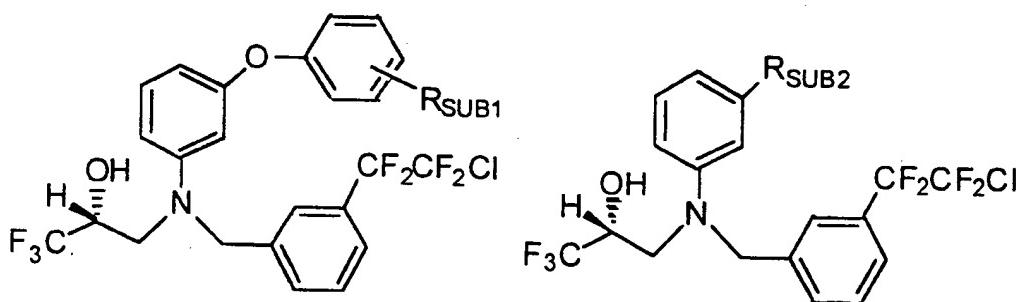
Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
333	3-isopropyl	357	3-CF <sub>3</sub> O-benzylxy
334	2-Cl, 3-Cl	358	3-CF <sub>3</sub> -benzylxy
335	3-CF <sub>3</sub> O	359	3-F, 5-F-benzylxy
336	4-F	360	cyclohexylmethylenoxy
337	4-CH <sub>3</sub>	361	benzylxy
338	2-F, 5-Br	362	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
339	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	363	4-CF <sub>3</sub> O-benzylxy
340	3-CH <sub>3</sub> CH <sub>2</sub>	364	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
341	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	365	isopropoxy
342	3-(CH <sub>3</sub> ) <sub>3</sub> C	366	3-CF <sub>3</sub> -benzyl
343	4-F, 3-CH <sub>3</sub>	367	isopropylthio
344	3-Cl, 4-Cl	368	cyclopentoxy
345	3,4-(CH <sub>2</sub> ) <sub>4</sub>	369	3-Cl-5-pyridinyloxy
346	3-HCF <sub>2</sub> CF <sub>2</sub> O	370	3-CF <sub>3</sub> S-benzylxy
347	3-CHF <sub>2</sub> O	371	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
348	3-(CH <sub>3</sub> ) <sub>2</sub> N	372	2-F, 3-CF <sub>3</sub> -benzylxy
349	3-cyclopropyl	373	3-F, 5-CF <sub>3</sub> -benzylxy
350	3-(2-furyl)	374	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
351	3-CF <sub>3</sub> CF <sub>2</sub>	375	1-phenylethoxy
352	4-NH <sub>2</sub>	376	4-F, 3-CH <sub>3</sub> -benzoyl

Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

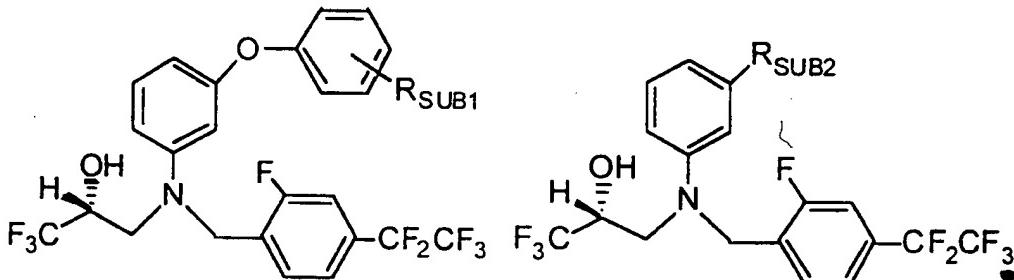
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
353	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	377	3-CF <sub>3</sub> -phenyl
354	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	378	4-CH <sub>3</sub> O-phenylamino
355	3-CF <sub>3</sub>	379	cyclopropoxy
356	2-NO <sub>2</sub>	380	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
381	3-isopropyl	405	3-CF <sub>3</sub> O-benzylxy
382	2-Cl, 3-Cl	406	3-CF <sub>3</sub> -benzylxy
383	3-CF <sub>3</sub> O	407	3-F, 5-F-benzylxy
384	4-F	408	cyclohexylmethylenoxy
385	4-CH <sub>3</sub>	409	benzylxy
386	2-F, 5-Br	410	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
387	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	411	4-CF <sub>3</sub> O-benzylxy
388	3-CH <sub>3</sub> CH <sub>2</sub>	412	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
389	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	413	isopropoxy
390	3-(CH <sub>3</sub> ) <sub>3</sub> C	414	3-CF <sub>3</sub> -benzyl
391	4-F, 3-CH <sub>3</sub>	415	isopropylthio
392	3-Cl, 4-Cl	416	cyclopentoxy
393	3,4-(CH <sub>2</sub> ) <sub>4</sub>	417	3-Cl-5-pyridinyloxy

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
394	3-HCF <sub>2</sub> CF <sub>2</sub> O	418	3-CF <sub>3</sub> S-benzylxy
395	3-CHF <sub>2</sub> O	419	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
396	3-(CH <sub>3</sub> ) <sub>2</sub> N	420	2-F, 3-CF <sub>3</sub> -benzylxy
397	3-cyclopropyl	421	3-F, 5-CF <sub>3</sub> -benzylxy
398	3-(2-furyl)	422	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
399	3-CF <sub>3</sub> CF <sub>2</sub>	423	1-phenylethoxy
400	4-NH <sub>2</sub>	424	4-F, 3-CH <sub>3</sub> -benzoyl
401	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	425	3-CF <sub>3</sub> -phenyl
402	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	426	4-CH <sub>3</sub> O-phenylamino
403	3-CF <sub>3</sub>	427	cyclopropoxy
404	2-NO <sub>2</sub>	428	4-NO <sub>2</sub> -phenylthio

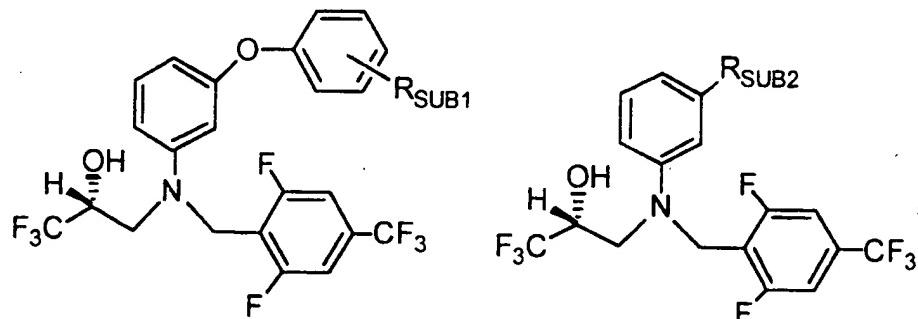


<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
429	3-isopropyl	453	3-CF <sub>3</sub> O-benzylxy
430	2-Cl, 3-Cl	454	3-CF <sub>3</sub> -benzylxy
431	3-CF <sub>3</sub> O	455	3-F, 5-F-benzylxy
432	4-F	456	cyclohexylmethylenoxy
433	4-CH <sub>3</sub>	457	benzylxy
434	2-F, 5-Br	458	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy

Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanoils.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
435	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	459	4-CF <sub>3</sub> O-benzylxy
436	3-CH <sub>3</sub> CH <sub>2</sub>	460	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
437	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	461	isopropoxy
438	3-(CH <sub>3</sub> ) <sub>3</sub> C	462	3-CF <sub>3</sub> -benzyl
439	4-F, 3-CH <sub>3</sub>	463	isopropylthio
440	3-Cl, 4-Cl	464	cyclopentoxy
441	3,4-(CH <sub>2</sub> ) <sub>4</sub>	465	3-Cl-5-pyridinyloxy
442	3-HCF <sub>2</sub> CF <sub>2</sub> O	466	3-CF <sub>3</sub> S-benzylxy
443	3-CHF <sub>2</sub> O	467	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
444	3-(CH <sub>3</sub> ) <sub>2</sub> N	468	2-F, 3-CF <sub>3</sub> -benzylxy
445	3-cyclopropyl	469	3-F, 5-CF <sub>3</sub> -benzylxy
446	3-(2-furyl)	470	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
447	3-CF <sub>3</sub> CF <sub>2</sub>	471	1-phenylethoxy
448	4-NH <sub>2</sub>	472	4-F, 3-CH <sub>3</sub> -benzoyl
449	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	473	3-CF <sub>3</sub> -phenyl
450	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	474	4-CH <sub>3</sub> O-phenylamino
451	3-CF <sub>3</sub>	475	cyclopropoxy
452	2-NO <sub>2</sub>	476	4-NO <sub>2</sub> -phenylthio

Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

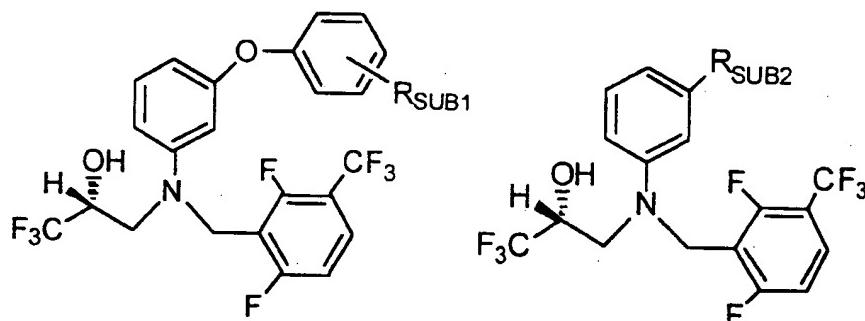


<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
477	3-isopropyl	501	3-CF <sub>3</sub> O-benzylxy
478	2-Cl, 3-Cl	502	3-CF <sub>3</sub> -benzylxy
479	3-CF <sub>3</sub> O	503	3-F, 5-F-benzylxy
480	4-F	504	cyclohexylmethylenoxy
481	4-CH <sub>3</sub>	505	benzylxy
482	2-F, 5-Br	506	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
483	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	507	4-CF <sub>3</sub> O-benzylxy
484	3-CH <sub>3</sub> CH <sub>2</sub>	508	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
485	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	509	isopropoxy
486	3-(CH <sub>3</sub> ) <sub>3</sub> C	510	3-CF <sub>3</sub> -benzyl
487	4-F, 3-CH <sub>3</sub>	511	isopropylthio
488	3-Cl, 4-Cl	512	cyclopentoxy
489	3,4-(CH <sub>2</sub> ) <sub>4</sub>	513	3-Cl-5-pyridinyloxy
490	3-HCF <sub>2</sub> CF <sub>2</sub> O	514	3-CF <sub>3</sub> S-benzylxy
491	3-CHF <sub>2</sub> O	515	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
492	3-(CH <sub>3</sub> ) <sub>2</sub> N	516	2-F, 3-CF <sub>3</sub> -benzylxy
493	3-cyclopropyl	517	3-F, 5-CF <sub>3</sub> -benzylxy
494	3-(2-furyl)	518	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
495	3-CF <sub>3</sub> CF <sub>2</sub>	519	1-phenylethoxy

Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>
496	4-NH <sub>2</sub>
497	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>
498	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O
499	3-CF <sub>3</sub>
500	2-NO <sub>2</sub>

<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
520	4-F, 3-CH <sub>3</sub> -benzoyl
521	3-CF <sub>3</sub> -phenyl
522	4-CH <sub>3</sub> O-phenylamino
523	cyclopropoxy
524	4-NO <sub>2</sub> -phenylthio

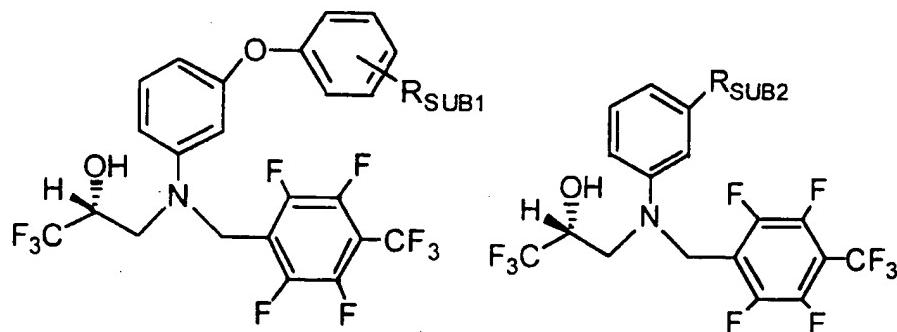


<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>
525	3-isopropyl
526	2-Cl, 3-Cl
527	3-CF <sub>3</sub> O
528	4-F
529	4-CH <sub>3</sub>
530	2-F, 5-Br
531	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>
532	3-CH <sub>3</sub> CH <sub>2</sub>
533	3-CH <sub>3</sub> , 5-CH <sub>3</sub>
534	3-(CH <sub>3</sub> ) <sub>3</sub> C
535	4-F, 3-CH <sub>3</sub>
536	3-Cl, 4-Cl

<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
549	3-CF <sub>3</sub> O-benzyloxy
550	3-CF <sub>3</sub> -benzyloxy
551	3-F, 5-F-benzyloxy
552	cyclohexylmethylenoxy
553	benzyloxy
554	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
555	4-CF <sub>3</sub> O-benzyloxy
556	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
557	isopropoxy
558	3-CF <sub>3</sub> -benzyl
559	isopropylthio
560	cyclopentoxy

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
537	3,4-(CH <sub>2</sub> ) <sub>4</sub>	561	3-Cl-5-pyridinyloxy
538	3-HCF <sub>2</sub> CF <sub>2</sub> O	562	3-CF <sub>3</sub> S-benzyloxy
539	3-CHF <sub>2</sub> O	563	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
540	3-(CH <sub>3</sub> ) <sub>2</sub> N	564	2-F, 3-CF <sub>3</sub> -benzyloxy
541	3-cyclopropyl	565	3-F, 5-CF <sub>3</sub> -benzyloxy
542	3-(2-furyl)	566	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
543	3-CF <sub>3</sub> CF <sub>2</sub>	567	1-phenylethoxy
544	4-NH <sub>2</sub>	568	4-F, 3-CH <sub>3</sub> -benzoyl
545	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	569	3-CF <sub>3</sub> -phenyl
546	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	570	4-CH <sub>3</sub> O-phenylamino
547	3-CF <sub>3</sub>	571	cyclopropoxy
548	2-NO <sub>2</sub>	572	4-NO <sub>2</sub> -phenylthio

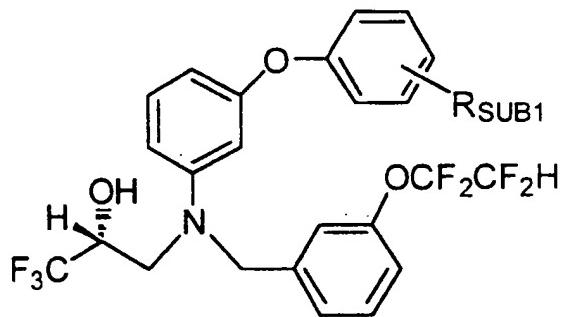


<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
573	3-isopropyl	597	3-CF <sub>3</sub> O-benzyloxy
574	2-Cl, 3-Cl	598	3-CF <sub>3</sub> -benzyloxy
575	3-CF <sub>3</sub> O	599	3-F, 5-F-benzyloxy
576	4-F	600	cyclohexylmethoxymethoxy

Example Table 8 (continued). Substituted (*2R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
577	4-CH <sub>3</sub>	601	benzyloxy
578	2-F, 5-Br	602	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
579	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	603	4-CF <sub>3</sub> O-benzyloxy
580	3-CH <sub>3</sub> CH <sub>2</sub>	604	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
581	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	605	isopropoxy
582	3-(CH <sub>3</sub> ) <sub>3</sub> C	606	3-CF <sub>3</sub> -benzyl
583	4-F, 3-CH <sub>3</sub>	607	isopropylthio
584	3-Cl, 4-Cl	608	cyclopentoxyl
585	3,4-(CH <sub>2</sub> ) <sub>4</sub>	609	3-Cl-5-pyridinyloxy
586	3-HCF <sub>2</sub> CF <sub>2</sub> O	610	3-CF <sub>3</sub> S-benzyloxy
587	3-CHF <sub>2</sub> O	611	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
588	3-(CH <sub>3</sub> ) <sub>2</sub> N	612	2-F, 3-CF <sub>3</sub> -benzyloxy
589	3-cyclopropyl	613	3-F, 5-CF <sub>3</sub> -benzyloxy
590	3-(2-furyl)	614	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
591	3-CF <sub>3</sub> CF <sub>2</sub>	615	1-phenylethoxy
592	4-NH <sub>2</sub>	616	4-F, 3-CH <sub>3</sub> -benzoyl
593	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	617	3-CF <sub>3</sub> -phenyl
594	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	618	4-CH <sub>3</sub> O-phenylamino
595	3-CF <sub>3</sub>	619	cyclopropoxy
596	2-NO <sub>2</sub>	620	4-NO <sub>2</sub> -phenylthio

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.



<u>Ex. No.</u>	<u>RSUB1</u>	<u>Calculated</u>	<u>Observed</u>
		<u>Mass [M+H]<sup>+</sup></u>	<u>Mass [M+H]<sup>+</sup></u>
621	4-F	522.1315	522.1297
622	2-Cl, 3-Cl	572.0630	572.0653
623	2-F, 5-Br	600.0420	600.0404
624	4-Cl, 3-CH <sub>3</sub>	551.1098	551.1101
625	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	532.1722	532.1705
626	3-(CH <sub>3</sub> ) <sub>3</sub> C	560.2035	560.2055
627	4-F, 3-CH <sub>3</sub>	536.1471	536.1480
628	3-Cl, 4-Cl	572.0630	572.0630
629	3,4-(CH <sub>2</sub> ) <sub>4</sub>	558.1879	558.1881
630	3-HCF <sub>2</sub> CF <sub>2</sub> O		
631	3-CHF <sub>2</sub> O		
632	3-(CH <sub>3</sub> ) <sub>2</sub> N	547.1831	547.1844
633	3-cyclopropyl		
634	3-(2-furyl)		
635	3-CF <sub>3</sub> CF <sub>2</sub>		
636	3-cyclopentyl		
637	4-NH <sub>2</sub>	519.1519	519.1529

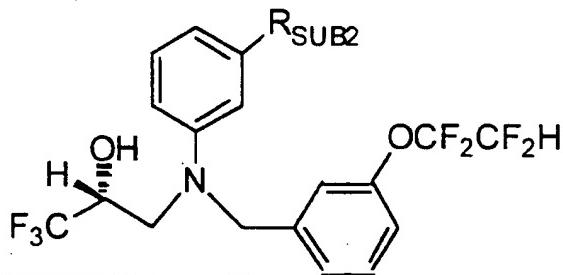
Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Calculated Mass [M+H]<sup>+</sup></u>	<u>Observed Mass [M+H]<sup>+</sup></u>
638	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	546.1879	546.1901
639	4-CH <sub>3</sub> CH <sub>2</sub> O	547.1594	547.1594
640	3-CF <sub>3</sub>		
641	2-NO <sub>2</sub>	549.1260	549.1235
642	3,4-dimethyl	531.1644	531.1649
643	3-methyl, 5-ethyl	546.1879	546.1899
644	3-methyl	517.1488	517.1493
645	2,3-difluoro	540.1221	540.1182
646	4-CF <sub>3</sub>	572.1282	572.1268
647	2-fluoro, 3-CF <sub>3</sub>	590.1189	590.1184
648	2-fluoro, 4-CF <sub>3</sub>	590.1189	590.1155
649	2-chloro, 4-fluoro	556.0925	556.0891
650	4- <i>n</i> -propyl	546.1879	546.1878
651	3-chloro, 4-fluoro	556.0925	556.0932
652	2,4-difluoro	540.1221	540.1194
653	3,5-difluoro	540.1221	540.1217
654	3,4-difluoro	540.1221	540.1248
655	3-fluoro	522.1315	522.1337
656	2-chloro	538.1019	538.1021
657	2-fluoro	522.1315	522.1310
658	2,5-difluoro	540.1221	540.1255
659	4-chloro, 2-fluoro	556.0926	556.0954
660	2,4-dichloro	572.0630	572.0667
661	2-fluoro, 3-CH <sub>3</sub>		
662	4-chloro	537.0942	537.0944

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Calculated</u>	<u>Observed</u>
		<u>Mass [M+H]<sup>+</sup></u>	<u>Mass [M+H]<sup>+</sup></u>
663	4-isopropyl, 3-methyl	560.2035	560.2035
664	2,3,4-trifluoro	558.1127	558.1161
665	2,3,5-trifluoro	558.1127	558.1109
666	4-propoxy	562.1828	562.1803
667	4-isopropyl	546.1879	546.1899
668	4-CF <sub>3</sub> O-	588.1233	588.1241
669	4-butoxy	576.1958	576.1969
670	3-methyl, 4-CH <sub>3</sub> S-	564.1443	564.1476
671	4-nitro	549.1260	549.1306
672	3-CF <sub>3</sub> S-		
673	4-chloro, 3-fluoro	556.0925	556.0933
674	3,5-dimethoxy	564.1623	564.1617
675	4-bromo	582.0716	582.0473
676	4-sec-butyl	560.2035	560.2051
677	3-fluoro-2-nitro	567.1166	567.1135
678	3-methoxy	533.1437	533.1450
679	4-bromo-2-nitro	627.0366	627.0375
680	4-cyano	529.1362	529.1364
681	4-CH <sub>3</sub> S-	550.1209	550.1251
682	3,4-(CH=CH) <sub>2</sub>	554.1566	554.1578
683	4-CH <sub>3</sub> CH <sub>2</sub> NH-	547.1832	547.1819
684	4-propionyl	560.1672	560.1694
685	3-phenyl	580.1723	580.1772
686	4-cyclopentyl	572.2035	572.2029

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.



<u>Ex.</u> <u>No.</u>	<u>RSUB2</u>	<u>Calculated</u> <u>Mass</u> <u>[M+H]<sup>+</sup></u>	<u>Observed</u> <u>Mass</u> <u>[M+H]<sup>+</sup></u>
687	6-methyl-3-pyridinyloxy	518.1440	518.1452
688	5-chloro-3-pyridinyloxy	539.0972	539.1002
689	3-pyridinyloxy	505.1362	505.1369
690	2-methyl-3-pyridinyloxy	519.1518	519.1517
691	5-indolinyloxy	543.1519	543.1630
692	4-fluoro-2-pyridinyloxy	523.1268	523.1243
693	2-cyano-3-pyridinyloxy	530.1315	530.1300
694	5-bromo-2-pyridinyloxy	583.0667	583.0405
695	3-CF <sub>3</sub> -2-pyridinyloxy	573.1236	573.1205
696	2-pyridinylmethoxymethoxy	519.1519	519.1522
697	cyclohexylmethoxymethoxy	524.2036	524.2028
698	isopropoxy	470.1488	470.1565
699	cyclopentyloxy	496.1723	496.1719
700	<i>neo</i> -pentoxy	498.1879	498.1845
701	4-(methoxycarbonyl)-butoxy	542.1777	542.1827
702	trifluoromethoxy	496.0971	496.0959
703	2-methylpropoxy	484.1723	484.1718
704	2-methoxyethoxy	486.1515	486.1537
705	2-oxobutoxy	498.1515	498.1529
706	cyclohexyloxy	510.1880	510.1910

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl]amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>RSUB2</u>	<u>Calculated</u>	<u>Observed</u>
		<u>Mass [M+H]<sup>+</sup></u>	<u>Mass [M+H]<sup>+</sup></u>
707	(methoxycarbonyl)methoxy	500.1308	500.1297
708	4-tetrahydropyranloxy	512.1672	512.1631
709	1-phenylethoxy	532.1723	532.1711
710	3-CF <sub>3</sub> O-benzylloxy	602.1389	602.1380
711	3-trifluoromethyl-benzylloxy	586.1440	586.1419
712	3,5-dimethyl-benzylloxy	546.1879	546.1890
713	3-bromo-benzylloxy	596.0671	596.0641
714	3-CF <sub>3</sub> S-benzylloxy	618.1161	618.1151
715	3,4-dimethyl-benzylloxy	546.1879	546.1881
716	3,5-difluoro-benzylloxy	554.1378	554.1390
717	2-fluoro-3-CF <sub>3</sub> -benzylloxy	604.1346	604.1329
718	benzylloxy	518.1566	518.1578
719	3,5-(CF <sub>3</sub> ) <sub>2</sub> -benzylloxy	654.1314	654.1308
720	3-fluoro-5-CF <sub>3</sub> -benzylloxy	604.1346	604.1309
721	4-CF <sub>3</sub> O-benzylloxy	602.1389	602.1383
722	3-chloro-benzylloxy	552.1176	552.1157
723	4-ethyl-benzylloxy	546.1879	546.1862
724	3-methyl-benzylloxy	532.1723	532.1692
725	2-fluoro-benzylloxy	536.1472	536.1465
726	2,3-difluoro-benzylloxy	554.1378	554.1364
727	4-isopropyl-benzylloxy	560.2036	560.2020
728	4-methyl-benzylloxy	532.1723	532.1729
729	4-bromo-benzylloxy	596.0671	596.0669
730	4-CF <sub>3</sub> -benzylloxy	586.1440	586.1400
731	4-fluoro-benzylloxy	536.1472	536.1454

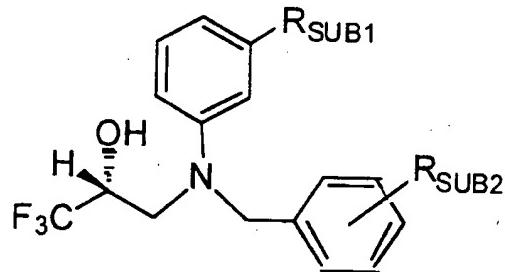
Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>	<u>Calculated</u>		<u>Observed</u>
		<u>Mass [M+H]<sup>+</sup></u>	<u>Mass [M+H]<sup>+</sup></u>	<u>Mass [M+H]<sup>+</sup></u>
732	3-iodo-benzylxy	644.0533	644.0517	
733	4-CF <sub>3</sub> S-benzylxy	618.1161	618.1165	
734	4-CF <sub>2</sub> HO-benzylxy	584.1483	584.1480	
735	4-fluoro-3-CF <sub>3</sub> -benzylxy	604.1346	604.1336	
736	2,3,5-trifluoro-benzylxy	572.1284	572.1276	
737	4-chloro-benzylxy	552.1176	552.1188	
738	2,5-difluoro-benzylxy	554.1378	554.1350	
739	3-chloro-2-fluoro-benzylxy	570.1082	570.1069	
740	2,4-(CF <sub>3</sub> ) <sub>2</sub> -benzylxy	654.1314	654.1321	
741	3,5-dichloro-benzylxy	586.1787	586.1378	
742	3-methoxy-benzylxy	548.1672	548.1676	
743	4-cyano-benzylxy	543.1519	543.1517	
744	4- <i>tert</i> -butyl-benzylxy	574.2192	574.2163	
745	isopropylthio	486.1338	486.1351	
746	4-nitrophenylthio	565.1032	565.1034	
747	4-acetylphenylthio	562.1287	562.1261	
748	(4-chloro-thien-2-yl)-methylthio	574.0512	574.0523	
749	4-methoxy-phenylamino	532.1597	532.1592	
750	3-methoxy-phenylamino	532.1597	532.1593	
751	4-chloro-phenylamino	536.1102	536.1125	
752	4- <i>n</i> -propyl-phenylamino	544.1961	544.1959	
753	3-cyano-phenylamino	527.1444	527.1448	
754	3-CF <sub>3</sub> -benzyl	570.1413	570.1480	
755	3-methyl-4-fluoro-benzyl	534.1679	534.1688	
756	3-CF <sub>3</sub> -phenyl	556.1334	556.1339	

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.

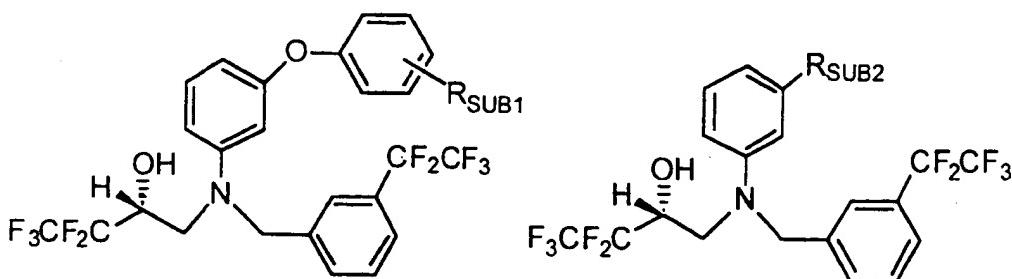
<u>Ex. No.</u>	<u>RSUB2</u>	<u>Calculated</u>	<u>Observed</u>
		<u>Mass [M+H]<sup>+</sup></u>	<u>Mass [M+H]<sup>+</sup></u>
757	2,4-dichloro-phenyl	556.0681	556.0651
758	3-methoxybenzyl	532.1723	532.1705
759	4-methoxyphenyl	518.1566	518.1533
760	3-chloro-4-fluoro-phenyl	540.0976	540.0957
761	4-fluoro-3-methyl-benzoyl	548.1410	548.1441
762	3-chlorobenzyl	536.1227	536.1218
763	3,4-dimethylbenzyl	530.1930	530.1887
764	3,5-dichlorobenzyl	570.0838	570.0801
765	2,3,4-trifluorophenyl	542.1177	542.1152
766	3-chloro-4-fluoro-benzyl	554.1133	554.1108
767	4-fluoro-3-methyl-phenyl	520.1523	520.1494
768	3-methyl-4-chloro-benzyl	550.1384	550.1380
769	2-methylpropanoyl	482.1566	482.1576
770	4-methylthiobenzyl	548.1494	548.1503
771	4-fluorophenyl	506.1366	506.1336
772	4-chlorophenyl	522.1071	522.1049
773	3-methoxyphenyl	518.1566	518.1544
774	4-methylbenzyl	516.1774	516.1769
775	1-hydroxy-2-methyl-propyl	484.1723	484.1725
776	benzyl	502.1617	502.1609
777	2-CF <sub>3</sub> -phenyl	556.1334	556.1286
778	3,4-dichlorophenyl	556.0681	556.0698
779	benzoyl	516.1410	516.1383
780	4-fluorobenzoyl	534.1315	534.1273
781	N-piperidinyl	494.1804	494.1804
782	phenyl	488.1460	488.1457
783	thien-2-yl	494.1024	494.0987

Example Table 8 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)methyl] amino]-1,1,1-trifluoro-2-propanols.



<u>Ex. No.</u>	<u><math>\text{R}_{\text{SUB}1}</math></u>	<u><math>\text{R}_{\text{SUB}2}</math></u>	<u>Calculated Mass</u> $[\text{M}+\text{H}]^+$	<u>Observed Mass</u> $[\text{M}+\text{H}]^+$
784	phenoxy	3-cyclopentyl	456.2150	456.2143
785	phenoxy	3-isopropoxy	446.1943	446.1936
786	phenoxy	3-CF <sub>3</sub> S	488.1119	488.1116
787	4-F-phenoxy	3-CF <sub>3</sub> S	505.0946	505.0927
788	4-F-phenoxy	3-sec-butoxy	478.2005	478.1880
789	phenoxy	3-(CF <sub>3</sub> ) <sub>2</sub> COH-	554.1378	554.1385
790	4-CH <sub>3</sub> - phenoxy	3-CF <sub>3</sub> S	502.1275	502.1261
791	phenoxy	3-(2-furyl)	454.1630	454.1635
792	4-F-phenoxy	3-isopropoxy	464.1849	464.1867
793	phenoxy	3-isobutyl	444.2150	444.2157
794	phenoxy	3- <i>tert</i> -butoxy	460.2100	460.2103
795	4-F-phenoxy	3-CH <sub>3</sub> CH <sub>2</sub> O-	450.1692	450.1682
796	4-F-phenoxy	3-CF <sub>3</sub> O-	490.1253	490.1211
797	phenoxy	4-F-3-(2-furyl)-	472.1536	472.1530
798	4-F-phenoxy	3-n-propoxy-	464.1849	464.1820
799	4-F-phenoxy	3-cyclopentyloxy-	490.2005	490.1998
800	phenoxy	3-(3-furyl)-	454.1630	454.1646
801	4-F-phenoxy	3-cyclopropyl- methyleneoxy	476.1849	476.1857
802	phenoxy	3-CF <sub>3</sub> CH <sub>2</sub> O-	486.1504	486.1498

185  
 Example Table 9. (3*R*)-4-[*N*-(aryl)-[(aryl)methyl]amino]-  
 1,1,1,2,2-pentafluoro-3-butanols.

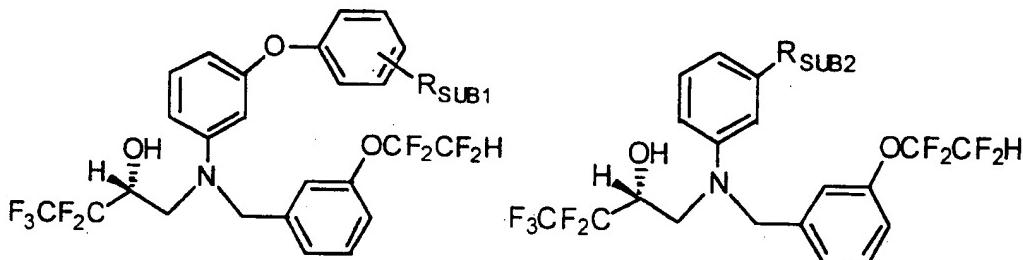


<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
803	3-isopropyl	827	3-CF <sub>3</sub> O-benzyloxy
804	2-Cl, 3-Cl	828	3-CF <sub>3</sub> -benzyloxy
805	3-CF <sub>3</sub> O	829	3-F, 5-F-benzyloxy
806	4-F	830	cyclohexylmethylenoxy
807	4-CH <sub>3</sub>	831	benzyloxy
808	2-F, 5-Br	832	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
809	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	833	4-CF <sub>3</sub> O-benzyloxy
810	3-CH <sub>3</sub> CH <sub>2</sub>	834	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
811	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	835	isopropoxy
812	3-(CH <sub>3</sub> ) <sub>3</sub> C	836	3-CF <sub>3</sub> -benzyl
813	4-F, 3-CH <sub>3</sub>	837	isopropylthio
814	3-Cl, 4-Cl	838	cyclopentoxy
815	3,4-(CH <sub>2</sub> ) <sub>4</sub>	839	3-Cl-5-pyridinyloxy
816	3-HCF <sub>2</sub> CF <sub>2</sub> O	840	3-CF <sub>3</sub> S-benzyloxy
817	3-CHF <sub>2</sub> O	841	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
818	3-(CH <sub>3</sub> ) <sub>2</sub> N	842	2-F, 3-CF <sub>3</sub> -benzyloxy
819	3-cyclopropyl	843	3-F, 5-CF <sub>3</sub> -benzyloxy
820	3-(2-furyl)	844	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
821	3-CF <sub>3</sub> CF <sub>2</sub>	845	1-phenylethoxy
822	4-NH <sub>2</sub>	846	4-F, 3-CH <sub>3</sub> -benzoyl
823	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	847	3-CF <sub>3</sub> -phenyl
824	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	848	4-CH <sub>3</sub> O-phenylamino

Example Table 9. (3*R*)-4-[*N*-(aryl)-[(aryl)methyl]amino]-1,1,1,2,2-pentafluoro-3-butanol (Continued).

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>
825	3-CF <sub>3</sub>
826	2-NO <sub>2</sub>

<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
849	cyclopropoxy
850	4-NO <sub>2</sub> -phenylthio



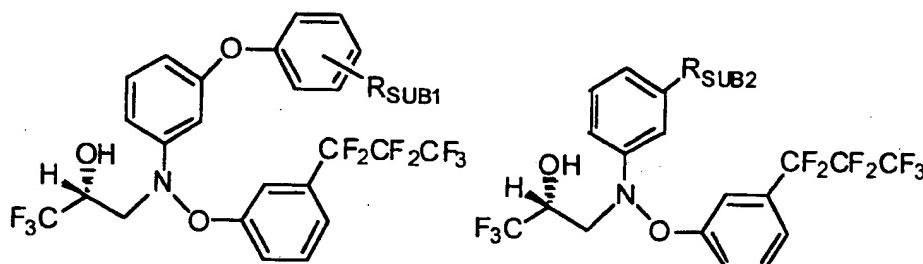
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>
851	3-isopropyl
852	2-Cl, 3-Cl
853	3-CF <sub>3</sub> O
854	4-F
855	4-CH <sub>3</sub>
856	2-F, 5-Br
857	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>
858	3-CH <sub>3</sub> CH <sub>2</sub>
859	3-CH <sub>3</sub> , 5-CH <sub>3</sub>
860	3-(CH <sub>3</sub> ) <sub>3</sub> C
861	4-F, 3-CH <sub>3</sub>
862	3-Cl, 4-Cl
863	3,4-(CH <sub>2</sub> ) <sub>4</sub>
864	3-HCF <sub>2</sub> CF <sub>2</sub> O
865	3-CHF <sub>2</sub> O
866	3-(CH <sub>3</sub> ) <sub>2</sub> N
867	3-cyclopropyl
868	3-(2-furyl)

<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
875	3-CF <sub>3</sub> O-benzyloxy
876	3-CF <sub>3</sub> -benzyloxy
877	3-F, 5-F-benzyloxy
878	cyclohexylmethylenoxy
879	benzyloxy
880	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
881	4-CF <sub>3</sub> O-benzyloxy
882	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
883	isopropoxy
884	3-CF <sub>3</sub> -benzyl
885	isopropylthio
886	cyclopentoxy
887	3-Cl-5-pyridinyloxy
888	3-CF <sub>3</sub> S-benzyloxy
889	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
890	2-F, 3-CF <sub>3</sub> -benzyloxy
891	3-F, 5-CF <sub>3</sub> -benzyloxy
892	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy

Example Table 9. (3*R*)-4-[*N*-(aryl)-{(aryl)methylamino]-1,1,1,2,2-pentafluoro-3-butanol (Continued).

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
869	3-CF <sub>3</sub> CF <sub>2</sub>	893	1-phenylethoxy
870	4-NH <sub>2</sub>	894	4-F, 3-CH <sub>3</sub> -benzoyl
871	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	895	3-CF <sub>3</sub> -phenyl
872	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	896	4-CH <sub>3</sub> O-phenylamino
873	3-CF <sub>3</sub>	897	cyclopropoxy
874	2-NO <sub>2</sub>	898	4-NO <sub>2</sub> -phenylthio

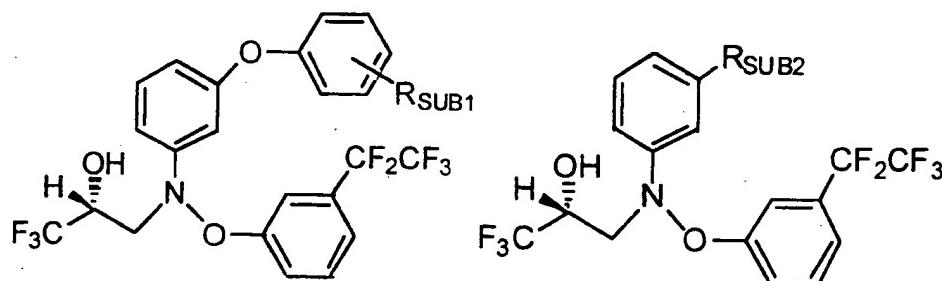
Example Table 10. Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)oxy]amino]-1,1,1-trifluoro-2-propanols.



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
899	3-isopropyl	923	3-CF <sub>3</sub> O-benzylxy
900	2-Cl, 3-Cl	924	3-CF <sub>3</sub> -benzylxy
901	3-CF <sub>3</sub> O	925	3-F, 5-F-benzylxy
902	4-F	926	cyclohexylmethylenoxy
903	4-CH <sub>3</sub>	927	benzylxy
904	2-F, 5-Br	928	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
905	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	929	4-CF <sub>3</sub> O-benzylxy
906	3-CH <sub>3</sub> CH <sub>2</sub>	930	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
907	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	931	isopropoxy
908	3-(CH <sub>3</sub> ) <sub>3</sub> C	932	3-CF <sub>3</sub> -benzyl
909	4-F, 3-CH <sub>3</sub>	933	isopropylthio
910	3-Cl, 4-Cl	934	cyclopentoxy
911	3,4-(CH <sub>2</sub> ) <sub>4</sub>	935	3-Cl-5-pyridinyloxy
912	3-HCF <sub>2</sub> CF <sub>2</sub> O	936	3-CF <sub>3</sub> S-benzylxy
913	3-CHF <sub>2</sub> O	937	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
914	3-(CH <sub>3</sub> ) <sub>2</sub> N	938	2-F, 3-CF <sub>3</sub> -benzylxy
915	3-cyclopropyl	939	3-F, 5-CF <sub>3</sub> -benzylxy
916	3-(2-furyl)	940	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
917	3-CF <sub>3</sub> CF <sub>2</sub>	941	1-phenylethoxy
918	4-NH <sub>2</sub>	942	4-F, 3-CH <sub>3</sub> -benzoyl
919	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	943	3-CF <sub>3</sub> -phenyl
920	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	944	4-CH <sub>3</sub> O-phenylamino
921	3-CF <sub>3</sub>	945	cyclopropoxy

Example Table 10 (continued). Substituted (2*R*)-3-[*N*-(aryl)-|(aryl)oxy]amino]-1,1,1-trifluoro-2-propanols.

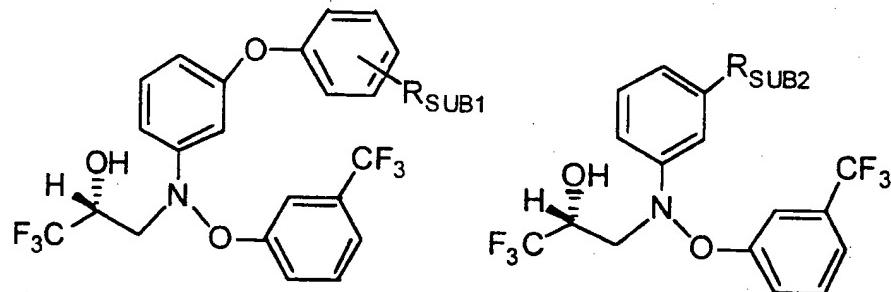
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
922	2-NO <sub>2</sub>	946	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
947	3-isopropyl	971	3-CF <sub>3</sub> O-benzylxy
948	2-Cl, 3-Cl	972	3-CF <sub>3</sub> -benzylxy
949	3-CF <sub>3</sub> O	973	3-F, 5-F-benzylxy
950	4-F	974	cyclohexylmethylenoxy
951	4-CH <sub>3</sub>	975	benzylxy
952	2-F, 5-Br	976	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
953	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	977	4-CF <sub>3</sub> O-benzylxy
954	3-CH <sub>3</sub> CH <sub>2</sub>	978	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
955	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	979	isopropoxy
956	3-(CH <sub>3</sub> ) <sub>3</sub> C	980	3-CF <sub>3</sub> -benzyl
957	4-F, 3-CH <sub>3</sub>	981	isopropylthio
958	3-Cl, 4-Cl	982	cyclopentoxy
959	3,4-(CH <sub>2</sub> ) <sub>4</sub>	983	3-Cl-5-pyridinyloxy
960	3-HCF <sub>2</sub> CF <sub>2</sub> O	984	3-CF <sub>3</sub> S-benzylxy
961	3-CHF <sub>2</sub> O	985	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
962	3-(CH <sub>3</sub> ) <sub>2</sub> N	986	2-F, 3-CF <sub>3</sub> -benzylxy
963	3-cyclopropyl	987	3-F, 5-CF <sub>3</sub> -benzylxy
964	3-(2-furyl)	988	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy

Example Table 10 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)oxy]amino]-1,1,1-trifluoro-2-propanols.

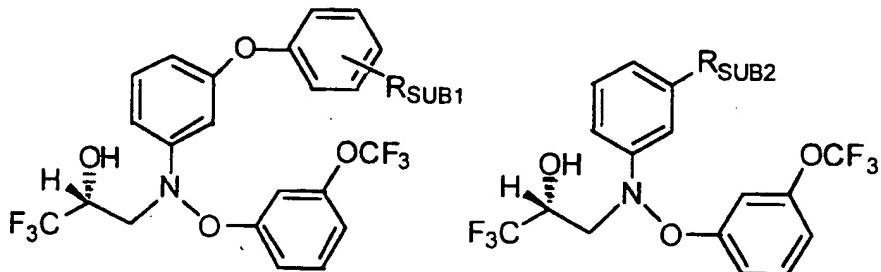
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
965	3-CF <sub>3</sub> CF <sub>2</sub>	989	1-phenylethoxy
966	4-NH <sub>2</sub>	990	4-F, 3-CH <sub>3</sub> -benzoyl
967	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	991	3-CF <sub>3</sub> -phenyl
968	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	992	4-CH <sub>3</sub> O-phenylamino
969	3-CF <sub>3</sub>	993	cyclopropoxy
970	2-NO <sub>2</sub>	994	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
995	3-isopropyl	1019	3-CF <sub>3</sub> O-benzyloxy
996	2-Cl, 3-Cl	1020	3-CF <sub>3</sub> -benzyloxy
997	3-CF <sub>3</sub> O	1021	3-F, 5-F-benzyloxy
998	4-F	1022	cyclohexylmethylenoxy
999	4-CH <sub>3</sub>	1023	benzyloxy
1000	2-F, 5-Br	1024	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
1001	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1025	4-CF <sub>3</sub> O-benzyloxy
1002	3-CH <sub>3</sub> CH <sub>2</sub>	1026	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
1003	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1027	isopropoxy
1004	3-(CH <sub>3</sub> ) <sub>3</sub> C	1028	3-CF <sub>3</sub> -benzyl
1005	4-F, 3-CH <sub>3</sub>	1029	isopropylthio
1006	3-Cl, 4-Cl	1030	cyclopentoxy
1007	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1031	3-Cl-5-pyridinyloxy

Example Table 10 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)oxy]amino]-1,1,1-trifluoro-2-propanols.

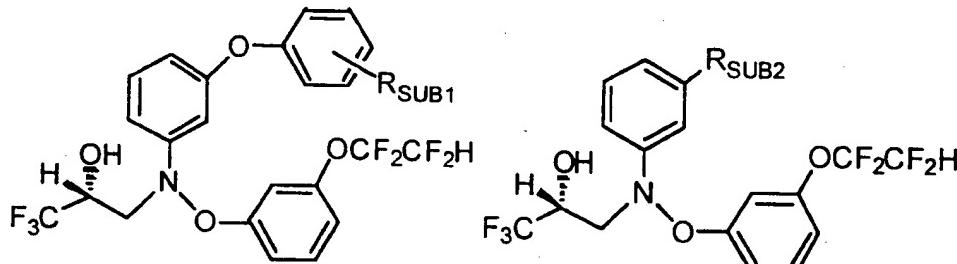
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1008	3-HCF <sub>2</sub> CF <sub>2</sub> O	1032	3-CF <sub>3</sub> S-benzyloxy
1009	3-CHF <sub>2</sub> O	1033	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
1010	3-(CH <sub>3</sub> ) <sub>2</sub> N	1034	2-F, 3-CF <sub>3</sub> -benzyloxy
1011	3-cyclopropyl	1035	3-F, 5-CF <sub>3</sub> -benzyloxy
1012	3-(2-furyl)	1036	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
1013	3-CF <sub>3</sub> CF <sub>2</sub>	1037	1-phenylethoxy
1014	4-NH <sub>2</sub>	1038	4-F, 3-CH <sub>3</sub> -benzoyl
1015	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1039	3-CF <sub>3</sub> -phenyl
1016	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1040	4-CH <sub>3</sub> O-phenylamino
1017	3-CF <sub>3</sub>	1041	cyclopropoxy
1018	2-NO <sub>2</sub>	1042	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1043	3-isopropyl	1067	3-CF <sub>3</sub> O-benzyloxy
1044	2-Cl, 3-Cl	1068	3-CF <sub>3</sub> -benzyloxy
1045	3-CF <sub>3</sub> O	1069	3-F, 5-F-benzyloxy
1046	4-F	1070	cyclohexylmethylenoxy
1047	4-CH <sub>3</sub>	1071	benzyloxy
1048	2-F, 5-Br	1072	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
1049	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1073	4-CF <sub>3</sub> O-benzyloxy
1050	3-CH <sub>3</sub> CH <sub>2</sub>	1074	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy

Example Table 10 (continued). Substituted (2*R*)-3-[*N*-(aryl)-[(aryl)oxy]amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1051	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1075	isopropoxy
1052	3-(CH <sub>3</sub> ) <sub>3</sub> C	1076	3-CF <sub>3</sub> -benzyl
1053	4-F, 3-CH <sub>3</sub>	1077	isopropylthio
1054	3-Cl, 4-Cl	1078	cyclopentoxy
1055	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1079	3-Cl-5-pyridinyloxy
1056	3-HCF <sub>2</sub> CF <sub>2</sub> O	1080	3-CF <sub>3</sub> S-benzylxy
1057	3-CHF <sub>2</sub> O	1081	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
1058	3-(CH <sub>3</sub> ) <sub>2</sub> N	1082	2-F, 3-CF <sub>3</sub> -benzyloxy
1059	3-cyclopropyl	1083	3-F, 5-CF <sub>3</sub> -benzyloxy
1060	3-(2-furyl)	1084	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
1061	3-CF <sub>3</sub> CF <sub>2</sub>	1085	1-phenylethoxy
1062	4-NH <sub>2</sub>	1086	4-F, 3-CH <sub>3</sub> -benzoyl
1063	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1087	3-CF <sub>3</sub> -phenyl
1064	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1088	4-CH <sub>3</sub> O-phenylamino
1065	3-CF <sub>3</sub>	1089	cyclopropoxy
1066	2-NO <sub>2</sub>	1090	4-NO <sub>2</sub> -phenylthio

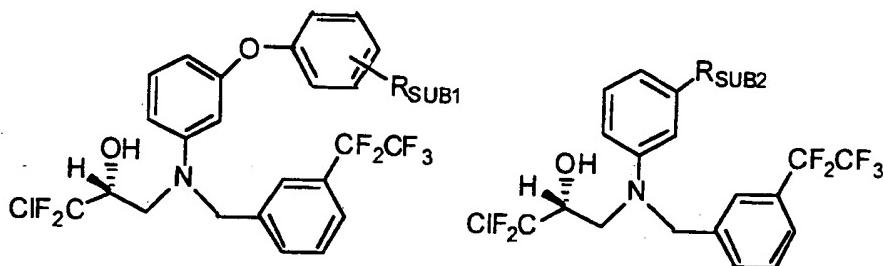


<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1091	3-isopropyl	1115	3-CF <sub>3</sub> O-benzyloxy
1092	2-Cl, 3-Cl	1116	3-CF <sub>3</sub> -benzyloxy
1093	3-CF <sub>3</sub> O	1117	3-F, 5-F-benzyloxy
1094	4-F	1118	cyclohexylmethoxy

Example Table 10 (continued). Substituted (2*R*)-3-[*N*-(aryl)-|(aryl)oxy|amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1095	4-CH <sub>3</sub>	1119	benzyloxy
1096	2-F, 5-Br	1120	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
1097	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1121	4-CF <sub>3</sub> O-benzyloxy
1098	3-CH <sub>3</sub> CH <sub>2</sub>	1122	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
1099	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1123	isopropoxy
1100	3-(CH <sub>3</sub> ) <sub>3</sub> C	1124	3-CF <sub>3</sub> -benzyl
1101	4-F, 3-CH <sub>3</sub>	1125	isopropylthio
1102	3-Cl, 4-Cl	1126	cyclopentoxyl
1103	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1127	3-Cl-5-pyridinyloxy
1104	3-HCF <sub>2</sub> CF <sub>2</sub> O	1128	3-CF <sub>3</sub> S-benzyloxy
1105	3-CHF <sub>2</sub> O	1129	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
1106	3-(CH <sub>3</sub> ) <sub>2</sub> N	1130	2-F, 3-CF <sub>3</sub> -benzyloxy
1107	3-cyclopropyl	1131	3-F, 5-CF <sub>3</sub> -benzyloxy
1108	3-(2-furyl)	1132	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
1109	3-CF <sub>3</sub> CF <sub>2</sub>	1133	1-phenylethoxy
1110	4-NH <sub>2</sub>	1134	4-F, 3-CH <sub>3</sub> -benzoyl
1111	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1135	3-CF <sub>3</sub> -phenyl
1112	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1136	4-CH <sub>3</sub> O-phenylamino
1113	3-CF <sub>3</sub>	1137	cyclopropoxy
1114	2-NO <sub>2</sub>	1138	4-NO <sub>2</sub> -phenylthio

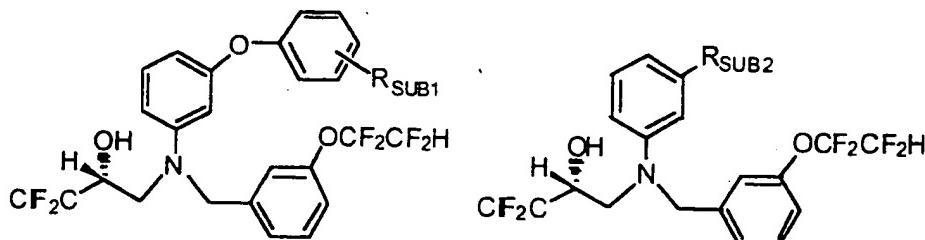
Example Table 11. (*2R*)-3-[*N*-(aryl)-[(aryl)methyl]amino]-1,1-difluoro-1-chloro-2-propanols.



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1139	3-isopropyl	1163	3-CF <sub>3</sub> O-benzylxy
1140	2-Cl, 3-Cl	1164	3-CF <sub>3</sub> -benzylxy
1141	3-CF <sub>3</sub> O	1165	3-F, 5-F-benzylxy
1142	4-F	1166	cyclohexylmethylenoxy
1143	4-CH <sub>3</sub>	1167	benzylxy
1144	2-F, 5-Br	1168	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
1145	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1169	4-CF <sub>3</sub> O-benzylxy
1146	3-CH <sub>3</sub> CH <sub>2</sub>	1170	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
1147	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1171	isopropoxy
1148	3-(CH <sub>3</sub> ) <sub>3</sub> C	1172	3-CF <sub>3</sub> -benzyl
1149	4-F, 3-CH <sub>3</sub>	1173	isopropylthio
1150	3-Cl, 4-Cl	1174	cyclopentoxy
1151	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1175	3-Cl-5-pyridinyloxy
1152	3-HCF <sub>2</sub> CF <sub>2</sub> O	1176	3-CF <sub>3</sub> S-benzylxy
1153	3-CHF <sub>2</sub> O	1177	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
1154	3-(CH <sub>3</sub> ) <sub>2</sub> N	1178	2-F, 3-CF <sub>3</sub> -benzylxy
1155	3-cyclopropyl	1179	3-F, 5-CF <sub>3</sub> -benzylxy
1156	3-(2-furyl)	1180	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
1157	3-CF <sub>3</sub> CF <sub>2</sub>	1181	1-phenylethoxy
1158	4-NH <sub>2</sub>	1182	4-F, 3-CH <sub>3</sub> -benzoyl
1159	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1183	3-CF <sub>3</sub> -phenyl
1160	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1184	4-CH <sub>3</sub> O-phenylamino
1161	3-CF <sub>3</sub>	1185	cyclopropoxy

Example Table 11 (continued). (2*R*)-3-[*N*-(aryl)-[(aryl)methyl]amino]-1,1-difluoro-1-chloro-2-propanols.

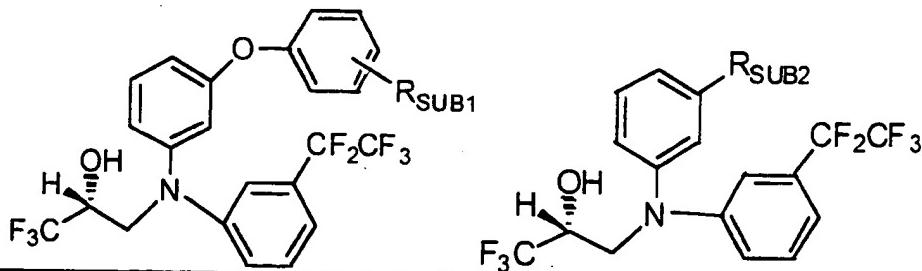
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1162	2-NO <sub>2</sub>	1186	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1187	3-isopropyl	1211	3-CF <sub>3</sub> O-benzylxy
1188	2-Cl, 3-Cl	1212	3-CF <sub>3</sub> -benzylxy
1189	3-CF <sub>3</sub> O	1213	3-F, 5-F-benzylxy
1190	4-F	1214	cyclohexylmethylenoxy
1191	4-CH <sub>3</sub>	1215	benzylxy
1192	2-F, 5-Br	1216	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzylxy
1193	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1217	4-CF <sub>3</sub> O-benzylxy
1194	3-CH <sub>3</sub> CH <sub>2</sub>	1218	4-CH <sub>3</sub> CH <sub>2</sub> -benzylxy
1195	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1219	isopropoxy
1196	3-(CH <sub>3</sub> ) <sub>3</sub> C	1220	3-CF <sub>3</sub> -benzyl
1197	4-F, 3-CH <sub>3</sub>	1221	isopropylthio
1198	3-Cl, 4-Cl	1222	cyclopentoxy
1199	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1223	3-Cl-5-pyridinyloxy
1200	3-HCF <sub>2</sub> CF <sub>2</sub> O	1224	3-CF <sub>3</sub> S-benzylxy
1201	3-CHF <sub>2</sub> O	1225	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzylxy
1202	3-(CH <sub>3</sub> ) <sub>2</sub> N	1226	2-F, 3-CF <sub>3</sub> -benzylxy
1203	3-cyclopropyl	1227	3-F, 5-CF <sub>3</sub> -benzylxy
1204	3-(2-furyl)	1228	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzylxy
1205	3-CF <sub>3</sub> CF <sub>2</sub>	1229	1-phenylethoxy

Example Table 11 (continued). (*2R*)-3-[*N*-(aryl)-[(aryl)methyl]amino]-1,1-difluoro-1-chloro-2-propanols.

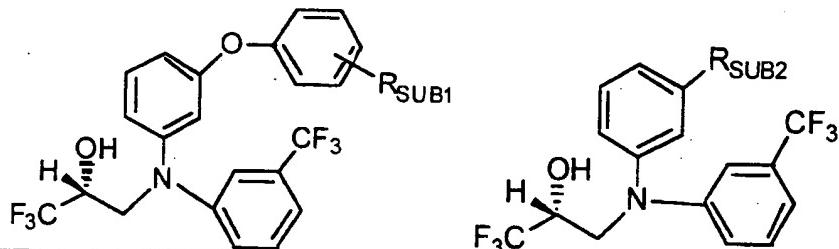
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1206	4-NH <sub>2</sub>	1230	4-F, 3-CH <sub>3</sub> -benzoyl
1207	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1231	3-CF <sub>3</sub> -phenyl
1208	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1232	4-CH <sub>3</sub> O-phenylamino
1209	3-CF <sub>3</sub>	1233	cyclopropoxy
1210	2-NO <sub>2</sub>	1234	4-NO <sub>2</sub> -phenylthio

Example Table 12. (2*R*)-3-[*N,N'*-(diaryl)amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1235	3-isopropyl	1259	3-CF <sub>3</sub> O-benzyl
1236	2-Cl, 3-Cl	1260	3-CF <sub>3</sub> -benzyloxy
1237	3-CF <sub>3</sub> O	1261	3-F, 5-F-benzyloxy
1238	4-F	1262	cyclohexylmethylenoxy
1239	4-CH <sub>3</sub>	1263	benzyloxy
1240	2-F, 5-Br	1264	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
1241	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1265	4-CF <sub>3</sub> O-benzyloxy
1242	3-CH <sub>3</sub> CH <sub>2</sub>	1266	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
1243	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1267	isopropoxy
1244	3-(CH <sub>3</sub> ) <sub>3</sub> C	1268	3-CF <sub>3</sub> -benzyl
1245	4-F, 3-CH <sub>3</sub>	1269	isopropylthio
1246	3-Cl, 4-Cl	1270	cyclopentoxy
1247	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1271	3-Cl-5-pyridinyloxy
1248	3-HCF <sub>2</sub> CF <sub>2</sub> O	1272	3-CF <sub>3</sub> S-benzyloxy
1249	3-CHF <sub>2</sub> O	1273	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
1250	3-(CH <sub>3</sub> ) <sub>2</sub> N	1274	2-F, 3-CF <sub>3</sub> -benzyloxy
1251	3-cyclopropyl	1275	3-F, 5-CF <sub>3</sub> -benzyloxy
1252	3-(2-furyl)	1276	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
1253	3-CF <sub>3</sub> CF <sub>2</sub>	1277	1-phenylethoxy
1254	4-NH <sub>2</sub>	1278	4-F, 3-CH <sub>3</sub> -benzoyl
1255	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1279	3-CF <sub>3</sub> -phenyl
1256	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1280	4-CH <sub>3</sub> O-phenylamino
1257	3-CF <sub>3</sub>	1281	cyclopropoxy

Example Table 12 (continued). (2*R*)-3-[*N,N'*-(diaryl)amino]-1,1,1-trifluoro-2-propanols.

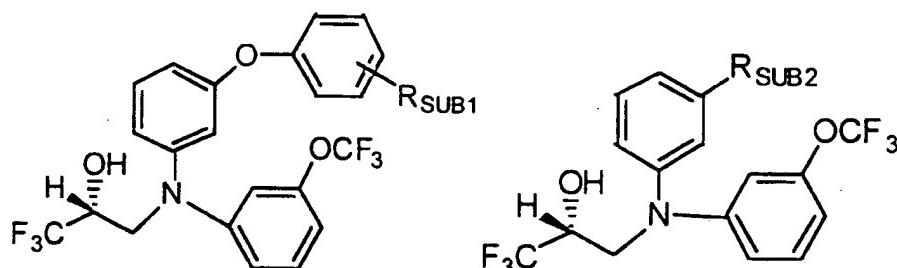
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1258	2-NO <sub>2</sub>	1282	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1283	3-isopropyl	1307	3-CF <sub>3</sub> O-benzylxy
1284	2-Cl, 3-Cl	1308	3-CF <sub>3</sub> -benzyloxy
1285	3-CF <sub>3</sub> O	1309	3-F, 5-F-benzyloxy
1286	4-F	1310	cyclohexylmethylenoxy
1287	4-CH <sub>3</sub>	1311	benzyloxy
1288	2-F, 5-Br	1312	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
1289	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1313	4-CF <sub>3</sub> O-benzyloxy
1290	3-CH <sub>3</sub> CH <sub>2</sub>	1314	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
1291	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1315	isopropoxy
1292	3-(CH <sub>3</sub> ) <sub>3</sub> C	1316	3-CF <sub>3</sub> -benzyl
1293	4-F, 3-CH <sub>3</sub>	1317	isopropylthio
1294	3-Cl, 4-Cl	1318	cyclopentoxy
1295	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1319	3-Cl-5-pyridinyloxy
1296	3-HCF <sub>2</sub> CF <sub>2</sub> O	1320	3-CF <sub>3</sub> S-benzyloxy
1297	3-CHF <sub>2</sub> O	1321	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
1298	3-(CH <sub>3</sub> ) <sub>2</sub> N	1322	2-F, 3-CF <sub>3</sub> -benzyloxy
1299	3-cyclopropyl	1323	3-F, 5-CF <sub>3</sub> -benzyloxy
1300	3-(2-furyl)	1324	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy

Example Table 12 (continued). (*2R*)-3-[*N,N'*-(diaryl)amino]-1,1,1-trifluoro-2-propanols.

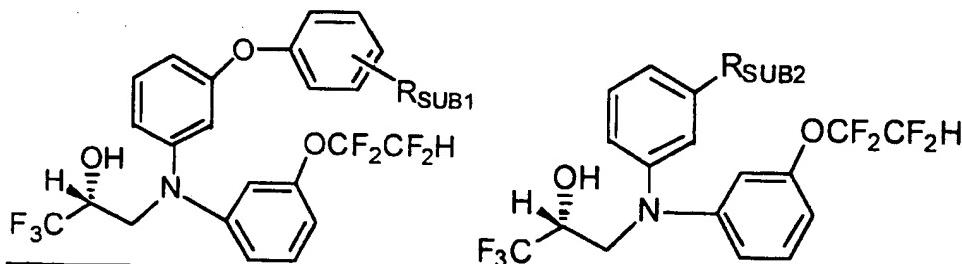
<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1301	3-CF <sub>3</sub> CF <sub>2</sub>	1325	1-phenylethoxy
1302	4-NH <sub>2</sub>	1326	4-F, 3-CH <sub>3</sub> -benzoyl
1303	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1327	3-CF <sub>3</sub> -phenyl
1304	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1328	4-CH <sub>3</sub> O-phenylamino
1305	3-CF <sub>3</sub>	1329	cyclopropoxy
1306	2-NO <sub>2</sub>	1330	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1331	3-isopropyl	1355	3-CF <sub>3</sub> O-benzyloxy
1332	2-Cl, 3-Cl	1356	3-CF <sub>3</sub> -benzyloxy
1333	3-CF <sub>3</sub> O	1357	3-F, 5-F-benzyloxy
1334	4-F	1358	cyclohexylmethylenoxy
1335	4-CH <sub>3</sub>	1359	benzyloxy
1336	2-F, 5-Br	1360	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
1337	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1361	4-CF <sub>3</sub> O-benzyloxy
1338	3-CH <sub>3</sub> CH <sub>2</sub>	1362	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy
1339	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1363	isopropoxy
1340	3-(CH <sub>3</sub> ) <sub>3</sub> C	1364	3-CF <sub>3</sub> -benzyl
1341	4-F, 3-CH <sub>3</sub>	1365	isopropylthio
1342	3-Cl, 4-Cl	1366	cyclopentoxy
1343	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1367	3-Cl-5-pyridinyloxy

Example Table 12 (continued). (2*R*)-3-[*N,N'*-(diaryl)amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1344	3-HCF <sub>2</sub> CF <sub>2</sub> O	1368	3-CF <sub>3</sub> S-benzyloxy
1345	3-CHF <sub>2</sub> O	1369	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyloxy
1346	3-(CH <sub>3</sub> ) <sub>2</sub> N	1370	2-F, 3-CF <sub>3</sub> -benzyloxy
1347	3-cyclopropyl	1371	3-F, 5-CF <sub>3</sub> -benzyloxy
1348	3-(2-furyl)	1372	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyloxy
1349	3-CF <sub>3</sub> CF <sub>2</sub>	1373	1-phenylethoxy
1350	4-NH <sub>2</sub>	1374	4-F, 3-CH <sub>3</sub> -benzoyl
1351	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1375	3-CF <sub>3</sub> -phenyl
1352	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1376	4-CH <sub>3</sub> O-phenylamino
1353	3-CF <sub>3</sub>	1377	cyclopropoxy
1354	2-NO <sub>2</sub>	1378	4-NO <sub>2</sub> -phenylthio



<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1379	3-isopropyl	1403	3-CF <sub>3</sub> O-benzyloxy
1380	2-Cl, 3-Cl	1404	3-CF <sub>3</sub> -benzyloxy
1381	3-CF <sub>3</sub> O	1405	3-F, 5-F-benzyloxy
1382	4-F	1406	cyclohexylmethylenoxy
1383	4-CH <sub>3</sub>	1407	benzyloxy
1384	2-F, 5-Br	1408	3-CF <sub>3</sub> , 5-CF <sub>3</sub> -benzyloxy
1385	4-Cl, 3-CH <sub>3</sub> CH <sub>2</sub>	1409	4-CF <sub>3</sub> O-benzyloxy
1386	3-CH <sub>3</sub> CH <sub>2</sub>	1410	4-CH <sub>3</sub> CH <sub>2</sub> -benzyloxy

Example Table 12 (continued). (*2R*)-3-[*N,N'*-(diaryl)amino]-1,1,1-trifluoro-2-propanols.

<u>Ex. No.</u>	<u>R<sub>SUB1</sub></u>	<u>Ex. No.</u>	<u>R<sub>SUB2</sub></u>
1387	3-CH <sub>3</sub> , 5-CH <sub>3</sub>	1411	isopropoxy
1388	3-(CH <sub>3</sub> ) <sub>3</sub> C	1412	3-CF <sub>3</sub> -benzyl
1389	4-F, 3-CH <sub>3</sub>	1413	isopropylthio
1390	3-Cl, 4-Cl	1414	cyclopentoxyl
1391	3,4-(CH <sub>2</sub> ) <sub>4</sub>	1415	3-Cl-5-pyridinyl
1392	3-HCF <sub>2</sub> CF <sub>2</sub> O	1416	3-CF <sub>3</sub> S-benzyl
1393	3-CHF <sub>2</sub> O	1417	3-CH <sub>3</sub> , 4-CH <sub>3</sub> -benzyl
1394	3-(CH <sub>3</sub> ) <sub>2</sub> N	1418	2-F, 3-CF <sub>3</sub> -benzyl
1395	3-cyclopropyl	1419	3-F, 5-CF <sub>3</sub> -benzyl
1396	3-(2-furyl)	1420	4-(CH <sub>3</sub> ) <sub>2</sub> CH-benzyl
1397	3-CF <sub>3</sub> CF <sub>2</sub>	1421	1-phenylethoxy
1398	4-NH <sub>2</sub>	1422	4-F, 3-CH <sub>3</sub> -benzoyl
1399	3-CH <sub>3</sub> , 4-CH <sub>3</sub> , 5-CH <sub>3</sub>	1423	3-CF <sub>3</sub> -phenyl
1400	4-CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> O	1424	4-CH <sub>3</sub> O-phenylamino
1401	3-CF <sub>3</sub>	1425	cyclopropoxy
1402	2-NO <sub>2</sub>	1426	4-NO <sub>2</sub> -phenylthio

## BIOASSAYS

CETP Activity *In Vitro*ASSAY OF CETP INHIBITION USING PURIFIED COMPONENTS  
(RECONSTITUTED BUFFER ASSAY)

5       The ability of compounds to inhibit CETP activity was assessed using an *in vitro* assay that measured the rate of transfer of radiolabeled cholesteryl ester ( $[^3\text{H}]$ CE) from HDL donor particles to LDL acceptor particles. Details of the assay are provided by Glenn, K. C. et al. (Glenn and Melton, "Quantification of Cholesteryl Ester Transfer Protein (CETP): A) CETP Activity and B)

10      10     Immunochemical Assay of CETP Protein," *Meth. Enzymol.*, 263, 339-351 (1996)). Human recombinant CETP can be obtained from the serum-free conditioned medium of CHO cells transfected with a cDNA for CETP and purified as described by Wang, S. et al. (*J. Biol. Chem.* 267, 17487-17490 (1992)). To measure CETP activity,  $[^3\text{H}]$ CE-labeled-HDL, LDL, CETP and

15      15     assay buffer (50 mM tris(hydroxymethyl)aminomethane, pH 7.4; 150 mM sodium chloride; 2 mM ethylenediamine-tetraacetic acid (EDTA); 1% bovine serum albumin) were incubated in a final volume of 200  $\mu\text{L}$ , for 2 hours at 37 °C in 96 well plates. Inhibitors were included in the assay by diluting from a 10 mM DMSO stock solution into 16% (v/v) aqueous DMSO so that the final

20      20     concentration of inhibitor was 800  $\mu\text{M}$ . The inhibitors were then diluted 1:1 with CETP in assay buffer, and then 25  $\mu\text{L}$  of that solution was mixed with 175  $\mu\text{L}$  of lipoprotein pool for assay. Following incubation, LDL was differentially precipitated by the addition of 50  $\mu\text{L}$  of 1% (w/v) dextran sulfate/0.5 M magnesium chloride, mixed by vortex, and incubated at room temperature for 10

25      25     minutes. A portion of the solution (200  $\mu\text{L}$ ) was transferred to a filter plate (Millipore). After filtration, the radioactivity present in the precipitated LDL was measured by liquid scintillation counting. Correction for non-specific transfer or precipitation was made by including samples that do not contain CETP. The rate

of [<sup>3</sup>H]CE transfer using this assay was linear with respect to time and CETP concentration, up to 25-30% of [<sup>3</sup>H]CE transferred.

The potency of test compounds was determined by performing the above described assay in the presence of varying concentrations of the test compounds  
5 and determining the concentration required for 50% inhibition of transfer of [<sup>3</sup>H]CE from HDL to LDL. This value was defined as the IC<sub>50</sub>. The IC<sub>50</sub> values determined from this assay are accurate when the IC<sub>50</sub> is greater than 10 nM. In the case where compounds have greater inhibitory potency, accurate measurements of IC<sub>50</sub> may be determined using longer incubation times (up to  
10 18 hours) and lower final concentrations of CETP (< 50 nM).

Examples of IC<sub>50</sub> values determined by these methods are summarized in Table 9.

#### ASSAY OF CETP INHIBITION IN HUMAN PLASMA

Blood was obtained from healthy volunteers, recruited from the personnel  
15 of Monsanto Company, Saint Louis, MO. Blood was collected in tubes containing EDTA (EDTA plasma pool). The EDTA human plasma pool, previously stored at -20 °C, was thawed at room temperature and centrifuged for 5 minutes to remove any particulate matter. Tritiated HDL, radiolabeled in the cholesteryl ester moiety ([<sup>3</sup>H]CE-HDL) as described by Morton and Zilversmit  
20 (J. Biol. Chem., 256, 11992-95 (1981)), was added to the plasma to a final concentration of 25 µg/mL cholesterol. Equal volumes (396 µL) of the plasma containing the [<sup>3</sup>H]CE-HDL were added by pipette into micro tubes (Titertube®, Bio-Rad laboratories, Hercules, CA). Inhibitor compounds, dissolved as 20-50 mM stock solutions in DMSO, were serially diluted in DMSO (or an alternative  
25 solvent in some cases, such as dimethylformamide or ethanol). Four µL of each of the serial dilutions of inhibitor compounds or DMSO alone were then added to each of the tubes containing plasma (396 µL). After mixing, triplicate aliquots (100 µL) from each plasma tube were then transferred to wells of 96-well round-

bottomed polystyrene microtiter plates (Corning, Corning, NY). Plates were sealed with plastic film and incubated at 37 °C for 4 hours. "Test" samples contained plasma with dilutions of inhibitor compounds. "Control" samples contained plasma with DMSO diluted to the same concentration as the test samples, but without inhibitor. "Blank" samples were prepared as "control" samples, but were left in the micro tubes at 4 °C for the 4 hour incubation and were then added to the microtiter wells at the end of the incubation period. VLDL and LDL were precipitated by the addition of 10 µL of precipitating reagent (1% (w/v) dextran sulfate (Dextralip50)/0.5 M magnesium chloride, pH 7.4) to all wells. The wells were mixed on a plate mixer and then incubated at ambient temperature for 10 min. The plates were then centrifuged at 1000 x g for 30 min at 10 °C. The supernatants (50 µL) from each well were then transferred to Picoplate™ 96 plate wells (Packard, Meriden, CT) containing Microscint™-40 (Packard, Meriden, CT). The plates were heat-sealed (TopSeal™-P, Packard, Meriden, CT) according to the manufacturer's directions and mixed for 30 min. Radioactivity was measured on a microplate scintillation counter (TopCount, Packard, Meriden, CT). The maximum percentage transfer in the control wells (% transfer) was determined using the following equation:

$$\% \text{ Transfer} = \frac{[\text{dpm}_{\text{blank}} - \text{dpm}_{\text{control}}]}{\text{dpm}_{\text{blank}}} \times 100$$

20 The percentage of transfer relative to the control (% control) was determined in the wells containing inhibitor compounds was determined as follows:

$$\% \text{ Control} = \frac{[\text{dpm}_{\text{blank}} - \text{dpm}_{\text{test}}]}{\text{dpm}_{\text{blank}} - \text{dpm}_{\text{control}}} \times 100$$

IC<sub>50</sub> values were then calculated from plots of % control versus concentration of inhibitor compound. IC<sub>50</sub> values were determined as the concentration of inhibitor compound inhibiting transfer of [<sup>3</sup>H]CE from the supernatant [<sup>3</sup>H]CE-

HDL to the precipitated VLDL and LDL by 50% compared to the transfer obtained in the control wells.

Examples of plasma IC<sub>50</sub> values determined by these methods are summarized in Table 10.

## 5 ASSAY OF CETP INHIBITION *IN VIVO*.

Inhibition of CETP activity by a test compound can be determined by administering the compound to an animal by intravenous injection or oral gavage, measuring the amount of transfer of tritium-labeled cholestryl ester ([<sup>3</sup>H]CE) from HDL to VLDL and LDL particles, and comparing this amount of transfer 10 with the amount of transfer observed in control animals.

Male golden Syrian hamsters were maintained on a diet of chow containing 0.24% cholesterol for at least two weeks prior to the study. For animals receiving intravenous dosing immediately before the experiment, animals were anesthetized with pentobarbital. Anesthesia was maintained throughout the 15 experiment. In-dwelling catheters were inserted into the jugular vein and carotid artery. At the start of the experiment all animals received 0.2 mL of a solution containing [<sup>3</sup>H]CE-HDL into the jugular vein. [<sup>3</sup>H]CE-HDL is a preparation of human HDL containing tritium-labeled cholestryl ester, and was prepared according to the method of Glenn et al. (*Meth. Enzymol.*, 263, 339-351 (1996)).  
20 Test compound was dissolved as a 80 mM stock solution in vehicle (2% ethanol: 98% PEG 400, Sigma Chemical Company, St. Louis, Missouri, USA) and administered either by bolus injection or by continuous infusion. Two minutes after the [<sup>3</sup>H]CE-HDL dose was administered, animals received 0.1 mL of the test solution injected into the jugular vein. Control animals received 0.1 mL of  
25 the intravenous vehicle solution without test compound. After 5 minutes, the first blood samples (0.5 mL) were taken from the carotid artery and collected in standard microtainer tubes containing ethylenediamine tetraacetic acid. Saline (0.5 mL) was injected to flush the catheter and replace blood volume. Subsequent blood samples were taken at two hours and four hours by the same

method. Blood samples were mixed well and kept on ice until the completion of the experiment. Plasma was obtained by centrifugation of the blood samples at 4 °C. The plasma (50 µL) was treated with 5 µL of precipitating reagent (dextran sulfate, 10 g/L; 0.5 M magnesium chloride) to remove VLDL/LDL. After 5 centrifugation, the resulting supernatant (25 µL) containing the HDL was analyzed for radioactivity using a liquid scintillation counter.

The percentage [<sup>3</sup>H]CE transferred from HDL to LDL and VLDL (% transfer) was calculated based on the total radioactivity in equivalent plasma samples before precipitation. Typically, the amount of transfer from HDL to 10 LDL and VLDL in control animals was 20% to 35% after 4 hours. The polyethylene glycol vehicle was determined to have no effect on CETP activity in this model.

Alternatively, conscious, non-anesthetized animals received an oral gavage dose of test compound as a suspension in 0.1% methyl cellulose in water. 15 At a time determined for each compound at which plasma levels of the test substance reached their peak ( $C_{max}$ ) after oral dosing, the animals were anesthetized with pentobarbital and then dosed with 0.2 mL of a solution containing [<sup>3</sup>H]CE-HDL into the jugular vein as described above. Control animals received 0.25 mL of the vehicle solution without test compound by oral 20 gavage. After 4 hours, the animals were sacrificed, blood samples were collected, and the percentage [<sup>3</sup>H]CE transferred from HDL to LDL and VLDL (% transfer) assayed, as described above. The aqueous methyl cellulose vehicle was determined to have no effect on CETP activity in this model. Results from testing in this model are summarized in Table 11.

25 Alternatively, inhibition of CETP activity by a test compound was determined by administering the compound to mice which have been selected for expression of human CETP (hCETP) by transgenic manipulation (hCETP mice). Test compounds were administered by intravenous injection, or oral gavage and the amount of transfer of tritium-labeled cholestryl ester ([<sup>3</sup>H]CE) from HDL to 30 VLDL and LDL particles was determined, and compared to the amount of

transfer observed in control animals. C57Bl/6 mice that were homozygous for the hCETP gene were maintained on a high fat chow diet, such as TD 88051, as described by Nishina et al. (*J Lipid Res.*, 31, 859-869 (1990)) for at least two weeks prior to the study. Mice received an oral gavage dose of test compound as 5 a suspension in 0.1% methyl cellulose in water or an intravenous bolus injection of test compound in 10% ethanol and 90% polyethylene glycol. Control animals received the vehicle solution without test compound by oral gavage or by an intravenous bolus injection. At the start of the experiment all animals received 0.05 mL of a solution containing [<sup>3</sup>H]CE-HDL into the tail vein. [<sup>3</sup>H]CE-HDL 10 is a preparation of human HDL containing tritium-labeled cholesteryl ester, and was prepared according to the method of Glenn et al. (*Meth. Enzymol.*, 263, 339-351 (1996)). After 30 minutes, the animals were exsanguinated and blood collected in standard microtainer tubes containing ethylenediamine tetraacetic acid. Blood samples were mixed well and kept on ice until the completion of the 15 experiment. Plasma was obtained by centrifugation of the blood samples at 4 °C. The plasma was separated and analyzed by gel filtration chromatography and the relative proportion of [<sup>3</sup>H]CE in the VLDL, LDL and HDL regions was determined.

The percentage [<sup>3</sup>H]CE transferred from HDL to LDL and VLDL (%) 20 transfer) was calculated based on the total radioactivity in equivalent plasma samples before precipitation. Typically, the amount of transfer from HDL to LDL and VLDL in control animals was 20% to 35% after 30 min. The polyethylene glycol and the aqueous methyl cellulose vehicles were determined to have no effect on CETP activity in this model. Results from testing in this 25 model are summarized in Table 12.

#### ASSAY OF PLASMA HDL ELEVATION *IN VIVO*.

Syrian Golden hamsters were made hypercholesterolemic by feeding cholesterol supplemented chow for a minimum of two weeks, as described above. Test compounds were administered orally in selected aqueous or oil based 30 vehicles for up to 1 week. Serum was obtained and analyzed by precipitation or

size exclusion chromatography for the relative abundance of VLDL, LDL and HDL. Results from testing in this model are summarized in Table 13.

Alternatively, a strain of C57bl mouse was made to transgenically express human CETP. Plasma concentrations of hCETP ranged from 2-20 5 µg/ml. The hCETP mice were made hypercholesterolemic by feeding cholesterol and fat supplemented chow for a minimum of two weeks, as described above. Test compounds were administered orally in selected aqueous or oil based vehicles for up to 1 week. Serum was obtained and analyzed by size exclusion chromatography for the relative abundance of 10 VLDL, LDL and HDL. Results from testing in this model are summarized in Table 14.

Alternatively, cynomolgous monkeys were maintained on a normal chow diet. The compound corresponding to example 8 was dissolved in a corn oil based vehicle and administered by oral gavage at 10 mpk q.d. for up 15 to 11 days. Plasma levels of drug were detected throughout the experiment in treated animals at ranges of 0.1-1.5 µg/mL. Periodically, plasma samples were taken and analyzed for total cholesterol and HDL. After seven days, the treated animals exhibited a 2% increase in HDL and a 5% increase in total cholesterol, relative to vehicle-treated controls.

20 Alternatively, rabbits were maintained on a normal chow diet. The compound corresponding to example 8 was dissolved in a vehicle of ethanol:propylene glycol (1.5:18) and administered by Alzet pump at 30 mg/day/animal for up to 14 days. Plasma concentrations of drug were detected throughout the duration of the pump infusion in treated animals and 25 averaged 1.2 µg/mL. Periodically, plasma samples were taken and analyzed for triglycerides, total cholesterol, and HDL. After fourteen days, the treated animals exhibited a 12% decrease in HDL, a 19% decrease in total cholesterol, as well as a 17% increase in triglycerides, compared to pre-dose levels.

Table 9. Inhibition of CETP Activity by Examples in  
Reconstituted Buffer Assay.

<u>Ex. No.</u>	<u>IC<sub>50</sub> (μM)</u>	<u>Ex. No.</u>	<u>IC<sub>50</sub> (μM)</u>
8	0.0008	42	0.38
11	0.001	27	0.44
19	0.004	26	0.53
9	0.008	29	0.72
10	0.012	3	0.76
2	0.014	28	0.86
4	0.014	32	1.2
20	0.027	25	1.4
22	0.027	39	1.6
12	0.034	15	1.6
14	0.04	30	2.7
18	0.044	33B	3.2
16	0.049	5	3.4
43	0.058	31	3.5
23	0.066	7	4.9
34	0.076	44	6.8
41	0.086	17	18
21	0.11	6	68
13	0.13	44A	> 50
1	0.14		
33	0.15		
38	0.18		
36	0.20		
37	0.21		
40	0.23		
35	0.28		
24	0.33		

210

Table 10. Inhibition of CETP Activity by  
Examples in Human Plasma Assay.

<u>Ex.</u> <u>No.</u>	<u>IC<sub>50</sub></u> ( $\mu$ M)
8	0.049
11	0.072
10	0.11
22	0.14
19	0.19
20	0.3
18	0.44
14	0.59
9	0.62
2	0.65
4	0.65
16	0.77
12	0.79
34	1.4
43	1.5
23	2.0
1	5.6
41	7.2
42	11
3	20

Table 11. Inhibition of CETP-mediated Transfer in Hamster

<u>Ex.</u> <u>No.</u>	<u>Single Oral Dose</u>	<u>% Inhibition of Transfer</u>
8	10 mpk	35

Table 12. Inhibition of CETP-mediated Transfer in hCETP Mice.

Ex. No.	Single Oral Dose	% Inhibition of Transfer
8	60 mpk	40

Table 13. Change in Lipoprotein Profile in Hamster.

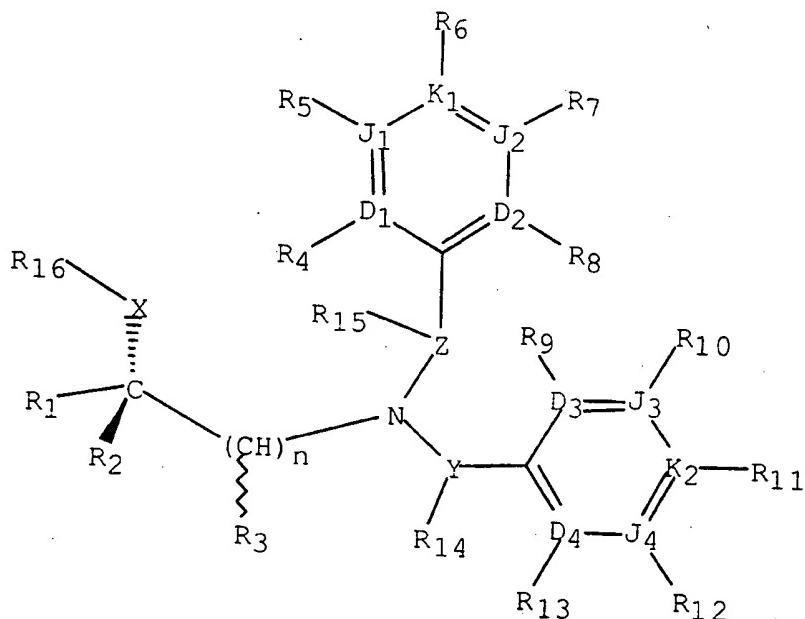
Ex. No.	Oral Dose qd, 5 days	% Change in Lipoprotein Profile		
		HDL	LDL	VLDL
8	30 mpk	12	-12	-22

Table 14. Change in Lipoprotein Profile in hCETP Mice.

Ex. No.	Oral Dose qd, 5 days	% Change in Lipoprotein Profile		
		HDL	LDL	VLDL
8	30 mpk	12	20	--

What we claim is:

1. A compound having the formula:



5

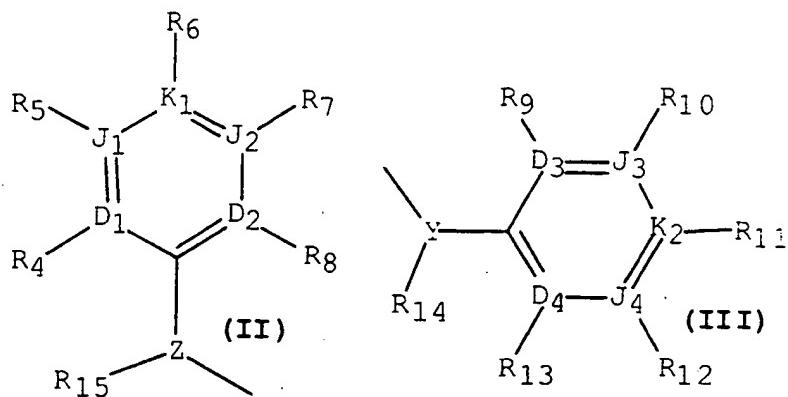
and a pharmaceutically-acceptable salt thereof, wherein;

n is an integer selected from 1 through 4;

X is oxy;

R<sub>1</sub> is selected from the group consisting of haloalkyl, haloalkenyl,

- 10     haloalkoxymethyl, and haloalkenyloxymethyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and (CH<sub>3</sub>)<sub>n</sub>-N(A)Q wherein A is Formula (II) and Q is Formula (III);



$R_{16}$  is selected from the group consisting of hydrido, alkyl, acyl, aroyl, heteroaroyl, trialkylsilyl, and a spacer selected from the group consisting of a covalent single bond and a linear spacer moiety having a chain length of 1 to 4 atoms linked to the point of bonding of any aromatic substituent selected from the group consisting of  $R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  to form a heterocyclyl ring having from 5 through 10 contiguous members;

$D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  is a covalent bond, no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  is O, no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  is S, one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  must be a covalent bond when two of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  are O and S, and no more than four of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  are N;  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no more than one is a covalent bond, no more than one of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  is O, no more than one of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  is S, no more than two of  $D_3$ ,  $D_4$ ,

$J_3$ ,  $J_4$  and  $K_2$  are O and S, one of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  must be a covalent bond when two of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  are O and S, and no more than four of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  are N;

$R_2$  is selected from the group consisting of hydrido, aryl, aralkyl,

- 5 alkyl, alkenyl, alkenyloxyalkyl, haloalkyl, haloalkenyl, halocycloalkyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, halocycloalkoxy, halocycloalkoxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, heteroaryl, dicyanoalkyl, and carboalkoxycyanoalkyl with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n^-$
- 10  $N(A)Q$ ;

$R_3$  is selected from the group consisting of hydrido, hydroxy, cyano, aryl, aralkyl, acyl, alkoxy, alkyl, alkenyl, alkoxyalkyl, heteroaryl, alkenyloxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl, monocyanoalkyl, dicyanoalkyl, carboxamide, and

- 15 carboxamidoalkyl with the provisos that  $(CHR_3)_n^-N(A)Q$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ ;

- $Y$  is selected from a group consisting of a covalent single bond,  $(C(R_{14}))_q$  wherein q is an integer selected from 1 and 2 and  $(CH(R_{14}))_g^-W^-$
- 20  $(CH(R_{14}))_p$  wherein g and p are integers independently selected from 0 and 1;

$R_{14}$  is selected from the group consisting of hydrido, hydroxy, cyano, hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkynyl, alkoxyalkyl, haloalkyl,

haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl,  
 monocarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl,  
 carboalkoxycyanoalkyl, carboalkoxy, carboxamide, carboxamidoalkyl;

Z is selected from the group consisting of covalent single bond.

- 5     $(C(R_{15}))_q$  wherein q is an integer selected from 1 and 2, and  $(CH(R_{15}))_j \cdot W \cdot (CH(R_{15}))_k$  wherein j and k are integers independently selected from 0 and 1;

W is selected from the group consisting of O, C(O), C(S).

$C(O)N(R_{14})$ ,  $C(S)N(R_{14})$ ,  $(R_{14})NC(O)$ ,  $(R_{14})NC(S)$ , S,  $S(O)$ ,  $S(O)_2$ .

- 10     $S(O)_2N(R_{14})$ ,  $(R_{14})NS(O)_2$ , and  $N(R_{14})$  with the proviso that  $R_{14}$  is other than cyano;

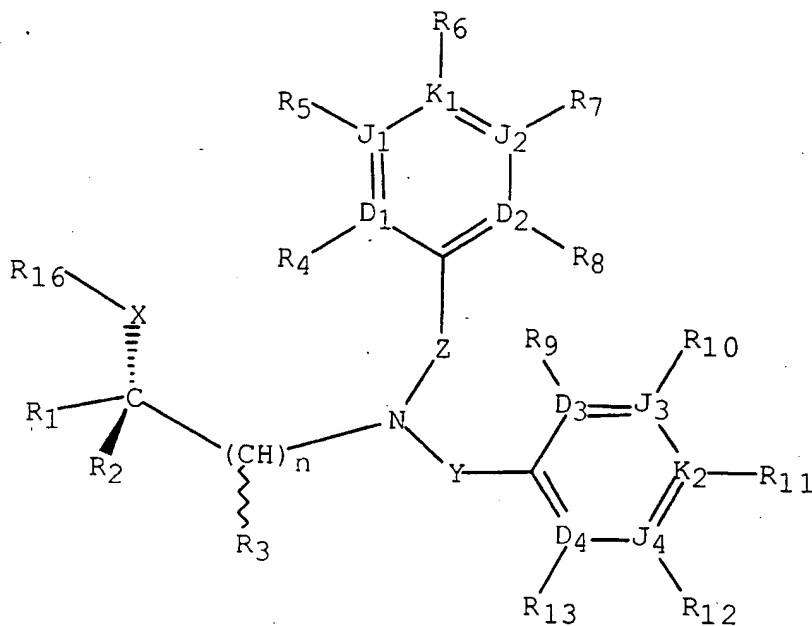
$R_{15}$  is selected from the group consisting of hydrido, cyano, hydroxyalkyl, acyl, alkoxy, alkyl, alkenyl, alkynyl, alkoxyalkyl, haloalkyl, haloalkenyl, haloalkoxy, haloalkoxyalkyl, haloalkenyloxyalkyl,  
 15    monocarboalkoxyalkyl, monocyanoalkyl, dicyanoalkyl, carboalkoxycyanoalkyl, carboalkoxy, carboxamide, and carboxamidoalkyl;

- $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{10}$ ,  $R_{11}$ ,  $R_{12}$ , and  $R_{13}$  are independently selected from the group consisting of hydrido, carboxy, heteroaralkylthio, heteroaralkoxy, cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclolxy, aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocyclol, perhaloaralkyl, aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl, halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl, heteroarylarnino, N-heteroarylarnino-N-alkylarnino,  
 20    heteroarylarninoalkyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy, cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy, cycloalkenyloxyalkyl,

- cycloalkylenedioxy, halocycloalkoxy, halocycloalkoxyalkyl,  
halocycloalkenyloxy, halocycloalkenyloxyalkyl, hydroxy, amino, thio, nitro,  
lower alkylamino, alkylthio, alkylthioalkyl, arylamino, aralkylamino,  
arylthio, arylthioalkyl, heteroaralkoxyalkyl, alkylsulfinyl, alkylsulfinylalkyl,  
5      arylsulfinylalkyl, arylsulfonylalkyl, heteroarylsulfinylalkyl,  
heteroarylsulfonylalkyl, alkylsulfonyl, alkylsulfonylalkyl,  
haloalkylsulfinylalkyl, haloalkylsulfonylalkyl, alkylsulfonamido,  
alkylaminosulfonyl, amidosulfonyl, monoalkyl amidosulfonyl, dialkyl  
amidosulfonyl, monoarylamidosulfonyl, arylsulfonamido,  
10     diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl, arylsulfinyl,  
arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl,  
heterocyclsulfonyl, heterocyclthio, alkanoyl, alkenoyl, aroyl, heteroaroyl,  
aralkanoyl, heteroaralkanoyl, haloalkanoyl, alkyl, alkenyl, alkynyl,  
alkenyloxy, alkenyloxyalky, alkylenedioxy, haloalkylenedioxy, cycloalkyl,  
15     cycloalkylalkanoyl, cycloalkenyl, lower cycloalkylalkyl, lower  
cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy,  
hydroxyhaloalkyl, hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl,  
haloalkoxyalkyl, aryl, heteroarkynyl, aryloxy, aralkoxy, aryloxyalkyl,  
saturated heterocycl, partially saturated heterocycl, heteroaryl,  
20     heteroaryloxy, heteroaryloxyalkyl, arylalkenyl, heteroarylalkenyl,  
carboxyalkyl, carboalkoxy, alkoxycarboxamido, alkylamidocarbonylamido,  
arylamidocarbonylamido, carboalkoxyalkyl, carboalkoxyalkenyl,  
carboaralkoxy, carboxamido, carboxamidoalkyl, cyano, carbohaloalkoxy,  
phosphono, phosphonoalkyl, diaralkoxyphosphono, and  
25     diaralkoxyphosphonoalkyl with the proviso that and R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>,  
R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, and R<sub>13</sub> are each independently selected to maintain the  
tetravalent nature of carbon, trivalent nature of nitrogen, the divalent nature  
of sulfur, and the divalent nature of oxygen;

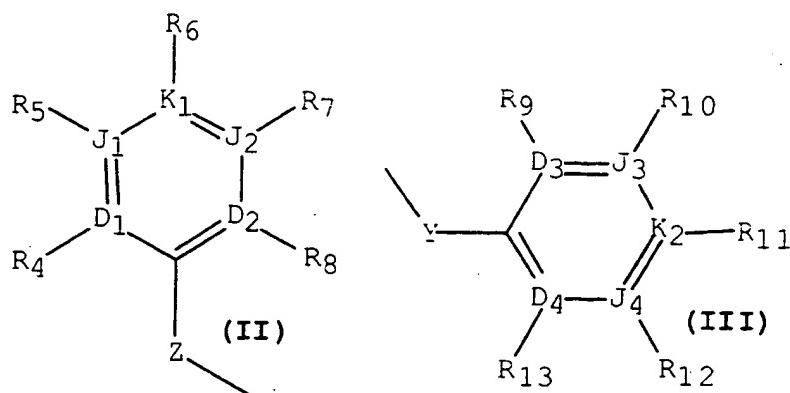
- R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, R<sub>7</sub> and R<sub>8</sub>, R<sub>8</sub> and R<sub>9</sub>, and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> are independently selected to form spacer pairs wherein a spacer pair is taken together to form a linear moiety having from 3 through 6 contiguous atoms connecting the points of bonding of said 5 spacer pair members to form a ring selected from the group consisting of a cycloalkenyl ring having 5 through 8 contiguous members, a partially saturated heterocyclyl ring having 5 through 8 contiguous members, a heteroaryl ring having 5 through 6 contiguous members, and an aryl with the provisos that no more than one of the group consisting of spacer pairs R<sub>4</sub> and 10 R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub>, is used at the same time and that no more than one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> is used at the same time:
- R<sub>4</sub> and R<sub>9</sub>, R<sub>4</sub> and R<sub>13</sub>, R<sub>8</sub> and R<sub>9</sub>, and R<sub>8</sub> and R<sub>13</sub> are independently selected to form a spacer pair wherein said spacer pair is taken together to 15 form a linear moiety wherein said linear moiety forms a ring selected from the group consisting of a partially saturated heterocyclyl ring having from 5 through 8 contiguous members and a heteroaryl ring having from 5 through 6 contiguous members with the proviso that no more than one of the group consisting of spacer pairs R<sub>4</sub> and R<sub>9</sub>, R<sub>4</sub> and R<sub>13</sub>, R<sub>8</sub> and R<sub>9</sub>, and R<sub>8</sub> and R<sub>13</sub> 20 is used at the same time.

2. The compound as recited in Claim 1 having the formula of:



or a pharmaceutically acceptable salt thereof, wherein;

- n is an integer selected from 1 through 3;
- 5 X is oxy;
- R<sub>16</sub> is selected from the group consisting of hydrido and a spacer selected from the group consisting of a covalent single bond and a linear spacer moiety having a chain length of 1 to 4 atoms linked to the point of bonding of any aromatic substituent selected from the group consisting of R<sub>4</sub>,
- 10 R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> to form a heterocyclyl ring having from 5 through 10 contiguous members;
- R<sub>1</sub> is selected from the group consisting of haloalkyl and haloalkoxymethyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q wherein A
- 15 is Formula (II) and Q is Formula (III);



$D_1, D_2, J_1, J_2$  and  $K_1$  are independently selected from the group

consisting of C, N, O, S and a covalent bond with the provisos that no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  is a covalent bond, no more than one of  $D_1$ ,

- 5       $D_2, J_1, J_2$  and  $K_1$  is O, no more than one of  $D_1, D_2, J_1, J_2$  and  $K_1$  is S, one of  $D_1, D_2, J_1, J_2$  and  $K_1$  must be a covalent bond when two of  $D_1, D_2, J_1, J_2$  and  $K_1$  are O and S, and no more than four of  $D_1, D_2, J_1, J_2$  and  $K_1$  are N;

$D_3, D_4, J_3, J_4$  and  $K_2$  are independently selected from the group consisting of C, N, O, S and a covalent bond with the provisos that no more than one of  $D_3, D_4, J_3, J_4$  and  $K_2$  is a covalent bond, no more than one of  $D_3, D_4, J_3, J_4$  and  $K_2$  is O, no more than one of  $D_3, D_4, J_3, J_4$  and  $K_2$  is S, one of  $D_3, D_4, J_3, J_4$  and  $K_2$  must be a covalent bond when two of  $D_3, D_4, J_3, J_4$  and  $K_2$  are O and S, and no more than four of  $D_3, D_4, J_3, J_4$  and  $K_2$  are N;

$R_2$  is selected from the group consisting of hydrido, aryl, alkyl, alkenyl, haloalkyl, haloalkoxy, haloalkoxyalkyl, perhaloaryl, perhaloaralkyl,

perhaloaryloxyalkyl, and heteroaryl with the proviso that R<sub>2</sub> has a lower

Cahn-Ingold-Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q;

R<sub>3</sub> is selected from the group consisting of hydrido, aryl, alkyl,

alkenyl, haloalkyl, and haloalkoxyalkyl with the provisos that (CHR<sub>3</sub>)<sub>n</sub>-

- 5 N(A)Q has a lower Cahn-Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-Ingold-Prelog stereochemical system ranking than R<sub>2</sub>:

Y is selected from the group consisting of a covalent single bond,

(CH<sub>2</sub>)<sub>q</sub> wherein q is an integer selected from 1 and 2, and (CH<sub>2</sub>)<sub>j</sub>-O-(CH<sub>2</sub>)<sub>k</sub>  
wherein j and k are integers independently selected from 0 and 1;

- 10 Z is selected from the group consisting of covalent single bond,

(CH<sub>2</sub>)<sub>q</sub> wherein q is an integer selected from 1 and 2, and (CH<sub>2</sub>)<sub>j</sub>-O-(CH<sub>2</sub>)<sub>k</sub>  
wherein j and k are integers independently selected from 0 and 1;

R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group  
consisting of hydrido, halo, haloalkyl, and alkyl;

- 15 R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>10</sub>, R<sub>11</sub>, and R<sub>12</sub> are independently selected from the  
group consisting of hydrido, carboxy, heteroaralkylthio, heteroaralkoxy,  
cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclxyloxy,  
aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocyclyl, perhaloaralkyl,  
aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl,

- 20 halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl,  
cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroarylarnino, N-  
heteroarylarnino-N-alkylarnino, heteroarylarninoalkyl, haloalkylthio,  
alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy,  
cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy,  
25 cycloalkenyloxyalkyl, cycloalkylenedioxy, halocycloalkoxy,

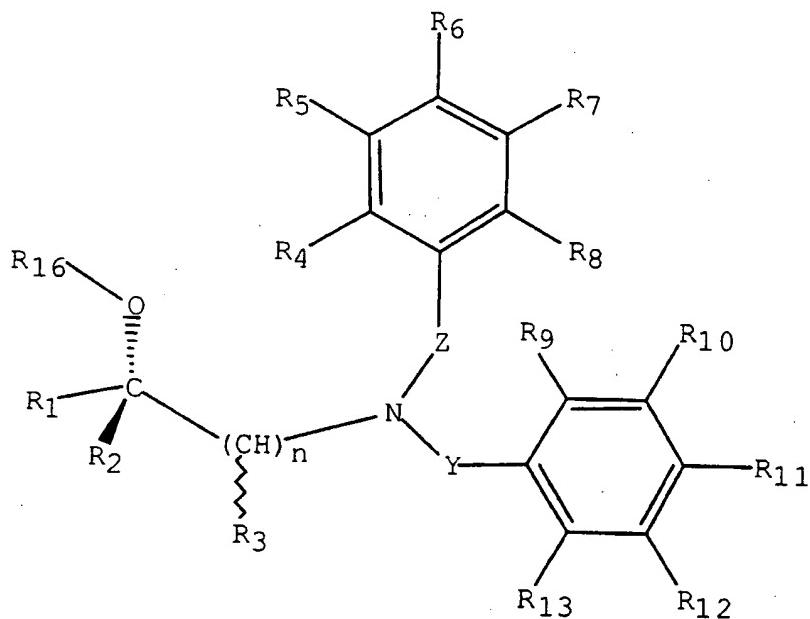
- halocycloalkoxyalkyl, halocycloalkenyoxy, halocycloalkenyloxyalkyl,  
hydroxy, amino, thio, nitro, lower alkylamino, alkylthio, alkylthioalkyl,  
arylamino, aralkylamino, arylthio, arylthioalkyl, heteroaralkoxyalkyl,  
alkylsulfinyl, alkylsulfinylalkyl, arylsulfinylalkyl, arylsulfonylalkyl,
- 5     heteroarylsulfinylalkyl, heteroarylsulfonylalkyl, alkylsulfonyl,  
      alkylsulfonylalkyl, haloalkylsulfinylalkyl, haloalkylsulfonylalkyl,  
      alkylsulfonamido, alkylaminosulfonyl, amidosulfonyl, monoalkyl  
      amidosulfonyl, dialkyl amidosulfonyl, monoaryl amidosulfonyl,  
      arylsulfonamido, diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl,
- 10    arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl,  
      heteroarylsulfonyl, heterocyclsulfonyl, heterocyclthio, alkanoyl, alkenoyl,  
      aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl, alkyl, alkenyl,  
      alkynyl, alkenyloxy, alkenyloxyalkyl, alkylenedioxy, haloalkylenedioxy,  
      cycloalkyl, cycloalkylalkanoyl, cycloalkenyl, lower cycloalkylalkyl, lower
- 15    cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy,  
      hydroxyhaloalkyl, hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl,  
      haloalkoxyalkyl, aryl, heteroaralkynyl, aryloxy, aralkoxy, aryloxyalkyl,  
      saturated heterocycl, partially saturated heterocycl, heteroaryl,  
      heteroaryloxy, heteroaryloxyalkyl, heteroaralkyl, arylalkenyl,
- 20    heteroarylalkenyl, carboxyalkyl, carboalkoxy, alkoxycarboxamido,  
      alkylamidocarbonylamido, arylamidocarbonylamido, carboalkoxyalkyl,  
      carboalkoxyalkenyl, carboaralkoxy, carboxamido, carboxamidoalkyl, cyano,  
      carbohaloalkoxy, phosphono, phosphonoalkyl, diaralkoxyphosphono, and  
      diaralkoxyphosphonoalkyl;
- 25    R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, R<sub>7</sub> and R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and  
      R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> are independently selected to form spacer  
      pairs wherein a spacer pair is taken together to form a linear moiety having  
      from 3 through 6 contiguous atoms connecting the points of bonding of said  
      spacer pair members to form a ring selected from the group consisting of a

cycloalkenyl ring having 5 through 8 contiguous members, a partially saturated heterocyclyl ring having 5 through 8 contiguous members, a heteroaryl ring having 5 through 6 contiguous members, and an aryl with the provisos that no more than one of the group consisting of spacer pairs R<sub>4</sub> and

- 5 R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub>, is used at the same time and that no more than one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> is used at the same time.

3. The compound as recited in Claim 2 having the formula of:

10



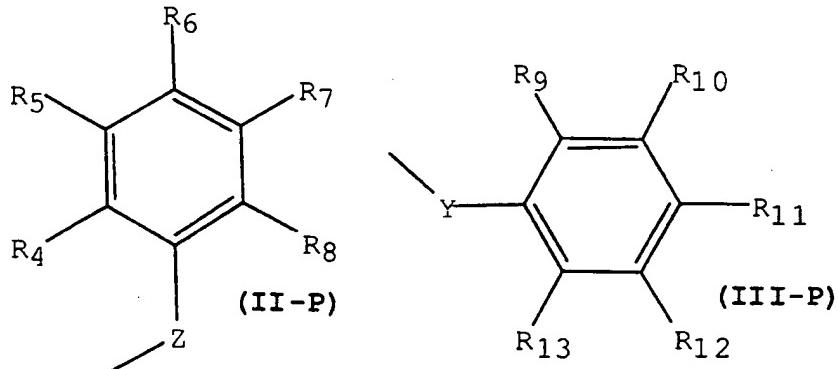
or a pharmaceutically acceptable salt thereof, wherein;

n is an integer selected from 1 through 3;

$R_{16}$  is selected from the group consisting of hydrido and a spacer selected from the group consisting of a covalent single bond and a linear spacer moiety having a chain length of 1 to 4 atoms linked to the point of bonding of any aromatic substituent selected from the group consisting of  $R_{17}$ .

- 5  $R_8$ ,  $R_9$ , and  $R_{13}$  to form a heterocyclic ring having from 5 through 10  
contiguous members;

$R_1$  is selected from the group consisting of haloalkyl and haloalkoxymethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P):



- $R_2$  is selected from the group consisting of hydrido, aryl, alkyl,  
alkenyl, haloalkyl, haloalkoxy, haloalkoxyalkyl, perhaloaryl, perhaloaralkyl,  
15 perhaloaryloxyalkyl, and heteroaryl with the proviso that  $R_2$  has a lower  
Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ ;

$R_3$  is selected from the group consisting of hydrido, aryl, alkyl,

alkenyl, haloalkyl, and haloalkoxyalkyl with the provisos that  $(CH_3)_n-$   
 $N(Ap)Qp$  has a lower Cahn-Ingold-Prelog stereochemical system ranking  
than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than

5       $R_2$ ;

$Y$  is selected from the group consisting of a covalent single bond,

$(CH_2)_q$  wherein  $q$  is an integer selected from 1 and 2, and  $(CH_2)_j-O-(CH_2)_k$   
wherein  $j$  and  $k$  are integers independently selected from 0 and 1;

$Z$  is selected from the group consisting of covalent single bond,

10      $(CH_2)_q$  wherein  $q$  is an integer selected from 1 and 2, and  $(CH_2)_j-O-(CH_2)_k$   
wherein  $j$  and  $k$  are integers independently selected from 0 and 1;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group  
consisting of hydrido, halo, haloalkyl, and alkyl ;

15      $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the  
group consisting of hydrido, carboxy, heteroaralkylthio, heteroaralkoxy,  
cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclxy,  
aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocyclyl, perhaloaralkyl,  
aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl,  
halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl,  
20     cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroarylamino, N-  
heteroarylamino-N-alkylamino, heteroarylaminoalkyl, haloalkylthio,  
alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy,  
cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy,  
cycloalkenyloxyalkyl, cycloalkylenedioxy, halocycloalkoxy,  
25     halocycloalkoxyalkyl, halocycloalkenyloxy, halocycloalkenyloxyalkyl,

- hydroxy, amino, thio, nitro, lower alkylamino, alkylthio, alkylthioalkyl, arylamino, aralkylamino, arylthio, arylthioalkyl, heteroaralkoxyalkyl, alkylsulfinyl, alkylsulfinylalkyl, arylsulfinylalkyl, arylsulfonylalkyl, heteroarylsulfinylalkyl, heteroarylsulfonylalkyl, alkylsulfonyl,
- 5 alkylsulfonylalkyl, haloalkylsulfinylalkyl, haloalkylsulfonylalkyl, alkylsulfonamido, alkylaminosulfonyl, amidosulfonyl, monoalkyl amidosulfonyl, dialkyl amidosulfonyl, monoaryl amidosulfonyl, arylsulfonamido, diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl, arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl,
- 10 heteroarylsulfonyl, heterocyclsulfonyl, heterocyclthio, alkanoyl, alkenoyl, aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl, alkyl, alkenyl, alkynyl, alkenyloxy, alkenyloxyalky, alkylenedioxy, haloalkylenedioxy, cycloalkyl, cycloalkylalkanoyl, cycloalkenyl, lower cycloalkylalkyl, lower cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy,
- 15 hydroxyhaloalkyl, hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl, haloalkoxyalkyl, aryl, heteroaralkynyl, aryloxy, aralkoxy, aryloxyalkyl, saturated heterocycl, partially saturated heterocycl, heteroaryl, heteroaryloxy, heteroaryloxyalkyl, heteroaralkyl, arylalkenyl, heteroarylalkenyl, carboxyalkyl, carboalkoxy, alkoxycarboxamido,
- 20 alkylamidocarbonylamido, arylamidocarbonylamido, carboalkoxyalkyl, carboalkoxyalkenyl, carboaralkoxy, carboxamido, carboxamidoalkyl, cyano, carbohaloalkoxy, phosphono, phosphonoalkyl, diaralkoxyphosphono, and diaralkoxyphosphonoalkyl;

$R_4$  and  $R_5$ ,  $R_5$  and  $R_6$ ,  $R_6$  and  $R_7$ ,  $R_7$  and  $R_8$ ,  $R_9$  and  $R_{10}$ ,  $R_{10}$  and

- 25  $R_{11}$ ,  $R_{11}$  and  $R_{12}$ , and  $R_{12}$  and  $R_{13}$  are independently selected to form spacer pairs wherein a spacer pair is taken together to form a linear moiety having from 3 through 6 contiguous atoms connecting the points of bonding of said spacer pair members to form a ring selected from the group consisting of a cycloalkenyl ring having 5 through 8 contiguous members, a partially

saturated heterocyclyl ring having 5 through 8 contiguous members, a heteroaryl ring having 5 through 6 contiguous members, and an aryl with the provisos that no more than one of the group consisting of spacer pairs R<sub>4</sub> and

R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub>, is used at the same time and that

- 5 no more than one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> is used at the same time.

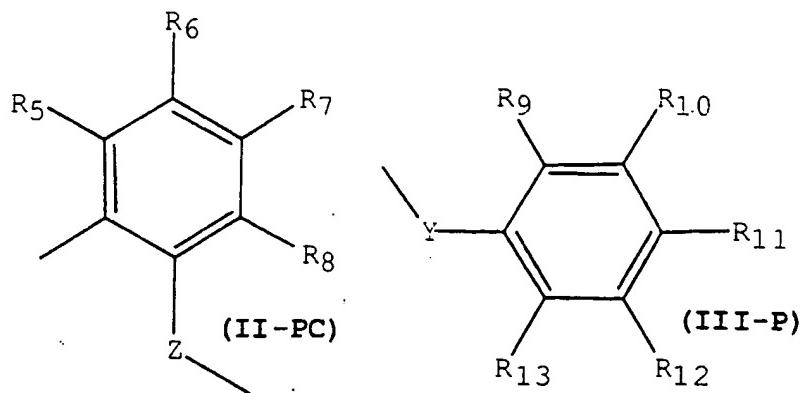
4. The compound as recited in Claim 3 or a pharmaceutically acceptable salt thereof, wherein:

10

n is the integer 1;

R<sub>16</sub> is taken together with R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, or R<sub>13</sub> to form a spacer selected from the group consisting of a covalent single bond, CH<sub>2</sub>, CH(CH<sub>3</sub>), CF<sub>2</sub>, C(O), C(S), and SO<sub>2</sub>:

- 15 R<sub>1</sub> is selected from the group consisting of trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(Apc)Qp wherein Apc is Formula (II-PC) and Qp is Formula (III-P);
- 20



$R_2$  is selected from the group consisting of hydrido, phenyl,

4-trifluoromethylphenyl, vinyl, 1,1,2,2-tetrafluoroethoxymethyl,  
trifluoromethoxymethyl, difluoromethyl, and 2,2,3,3,3-pentafluoropropyl

5 with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than  
both  $R_1$  and  $(CHR_3)_n-N(Apc)Qp$ :

$R_3$  is selected from the group consisting of hydrido, methyl, ethyl,

vinyl, phenyl, 4-trifluoromethylphenyl, trifluoromethyl,  
trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and

10 pentafluoroethyl with the provisos that  $(CHR_3)_n-N(Apc)Qp$  has a lower  
Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher  
Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ ;

$Y$  is selected from the group consisting of covalent single bond, oxy,  
methyleneoxy, methylene, and ethylene;

15  $Z$  is selected from the group consisting of covalent single bond, oxy,  
methyleneoxy, methylene, and ethylene;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group  
consisting of hydrido and fluoro;

- $R_5$  and  $R_{10}$  are independently selected from the group consisting of 4-aminophenoxy, benzoyl, benzyl, benzyloxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy, 4-bromo-2-nitrophenoxy, 3-bromobenzyloxy, 4-bromobenzyloxy, 4-bromophenoxy, 5-bromopyrid-2-yloxy,
- 5 4-butoxyphenoxy, chloro, 3-chlorobenzyl, 2-chlorophenoxy, 4-chlorophenoxy, 4-chloro-3-ethylphenoxy, 3-chloro-4-fluorobenzyl, 3-chloro-4-fluorophenyl, 3-chloro-2-fluorobenzyloxy, 3-chlorobenzyloxy, 4-chlorobenzyloxy, 4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy, 4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy,
- 10 3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy, 4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy, 2-cyanopyrid-3-yloxy, 4-cyanophenoxy, cyclobutoxy, cyclobutyl, cyclohexoxy, cyclohexylmethoxy, cyclopentoxy, cyclopentyl, cyclopentylcarbonyl, cyclopropyl, cyclopropylmethoxy, cyclopropoxy,
- 15 2,3-dichlorophenoxy, 2,4-dichlorophenoxy, 2,4-dichlorophenyl, 3,5-dichlorophenyl, 3,5-dichlorobenzyl, 3,4-dichlorophenoxy, 3,4-difluorophenoxy, 2,3-difluorobenzyloxy, 2,4-difluorobenzyloxy, 3,4-difluorobenzyloxy, 2,5-difluorobenzyloxy, 3,5-difluorophenoxy, 3,4-difluorophenyl, 3,5-difluorobenzyloxy, 4-difluoromethoxybenzyloxy,
- 20 2,3-difluorophenoxy, 2,4-difluorophenoxy, 2,5-difluorophenoxy, 3,5-dimethoxyphenoxy, 3-dimethylaminophenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3,4-dimethylbenzyl, 3,4-dimethylbenzyloxy, 3,5-dimethylbenzyloxy, 2,2-dimethylpropoxy, 1,3-dioxan-2-yl, 1,4-dioxan-2-yl, 1,3-dioxolan-2-yl, ethoxy, 4-ethoxyphenoxy,
- 25 4-ethylbenzyloxy, 3-ethylphenoxy, 4-ethylaminophenoxy, 3-ethyl-5-methylphenoxy, fluoro, 4-fluoro-3-methylbenzyl, 4-fluoro-3-methylphenyl, 4-fluoro-3-methylbenzoyl, 4-fluorobenzyloxy, 2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy, 3-fluorophenoxy, 3-fluoro-2-nitrophenoxy, 2-fluoro-3-trifluoromethylbenzyloxy,

- 3-fluoro-5-trifluoromethylbenzyloxy, 4-fluoro-2-trifluoromethylbenzyloxy,  
4-fluoro-3-trifluoromethylbenzyloxy, 2-fluorophenoxy, 4-fluorophenoxy,  
2-fluoro-3-trifluoromethylphenoxy, 2-fluorobenzyloxy,  
4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy,
- 5 4-fluoropyrid-2-yloxy, 2-furyl, 3-furyl, heptafluoropropyl,  
1,1,1,3,3,3-hexafluoropropyl, 2-hydroxy-3,3,3-trifluoropropoxy,  
3-iodobenzyloxy, isobutyl, isobutylamino, isobutoxy, 3-isoxazolyl,  
4-isoxazolyl, 5-isoxazolyl, isopropoxy, isopropyl, 4-isopropylbenzyloxy,  
3-isopropylphenoxy, 4-isopropylphenoxy, isopropylthio,
- 10 4-isopropyl-3-methylphenoxy, 3-isothiazolyl, 4-isothiazolyl,  
5-isothiazolyl, 3-methoxybenzyl, 4-methoxycarbonylbutoxy,  
3-methoxycarbonylprop-2-enyloxy, 4-methoxyphenyl,  
3-methoxyphenylamino, 4-methoxyphenylamino, 3-methylbenzyloxy,  
4-methylbenzyloxy, 3-methylphenoxy, 3-methyl-4-methylthiophenoxy,
- 15 4-methylphenoxy, 1-methylpropoxy, 2-methylpyrid-5-yloxy,  
4-methylthiophenoxy, 2-naphthyloxy, 2-nitrophenoxy, 4-nitrophenoxy,  
3-nitrophenyl, 4-nitrophenylthio, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl,  
pentafluoroethyl, pentafluoroethylthio, 2,2,3,3,3-pentafluoropropyl,  
1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl, phenoxy,
- 20 phenylamino, 1-phenylethoxy, phenylsulfonyl, 4-propanoylphenoxy,  
propoxy, 4-propylphenoxy, 4-propoxyphenoxy, thiophen-3-yl, *sec*-butyl,  
4-*sec*-butylphenoxy, *tert*-butoxy, 3-*tert*-butylphenoxy, 4-*tert*-butylphenoxy,  
1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl,  
2-(5,6,7,8-tetrahydronaphthyloxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl,
- 25 thiophen-2-yl, 2,3,5-trifluorobenzyloxy, 2,2,2-trifluoroethoxy,  
2,2,2-trifluoroethyl, 3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy,  
3-trifluoromethoxybenzyloxy, 4-trifluoromethoxybenzyloxy,  
3-trifluoromethoxyphenoxy, 4-trifluoromethoxyphenoxy, trifluoromethyl,  
3-trifluoromethylbenzyloxy, 4-trifluoromethylbenzyloxy,
- 30 2,4-bis-trifluoromethylbenzyloxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl,

3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzyloxy,

4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy,

3-trifluoromethylphenyl, 3-trifluoromethylthiobenzyloxy,

4-trifluoromethylthiobenzyloxy, 2,3,4-trifluorophenoxy,

5 2,3,4-trifluorophenyl, 2,3,5-trifluorophenoxy, 3,4,5-trimethylphenoxy,

3-difluoromethoxyphenoxy, 3-pentafluoroethylphenoxy,

3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 3-trifluoromethylthiophenoxy, and

trifluoromethylthio;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of

10 chloro, fluoro, hydrido, difluoromethoxy, trifluoromethyl, trifluoromethoxy, pentafluoroethyl, and 1,1,2,2-tetrafluoroethoxy;

$R_7$  and  $R_{12}$  are independently selected from the group consisting of hydrido, fluoro, and trifluoromethyl.

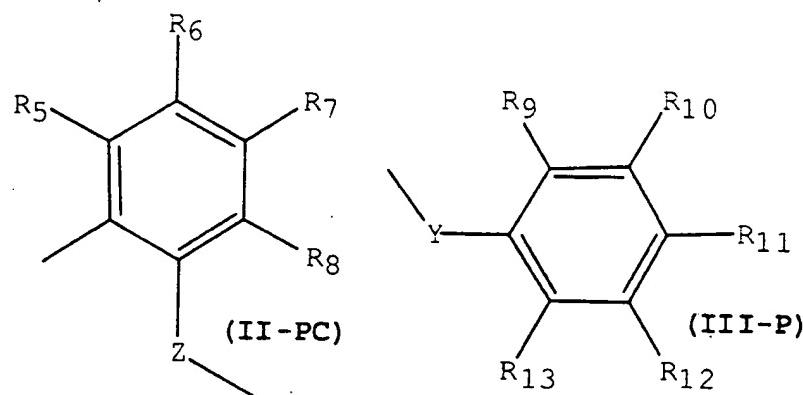
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5. The compound as recited in Claim 4 or a pharmaceutically acceptable salt thereof, wherein:

$R_{16}$  is taken together with  $R_4$ ,  $R_8$ ,  $R_9$ , or  $R_{13}$  to form a covalent single bond.

20  $n$  is the integer 1;

$R_1$  is selected from the group consisting of trifluoromethyl and pentafluoroethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Apc)Qp$  wherein Apc is Formula (II-PC) and Qp is Formula (III-P);



$R_2$  is selected from the group consisting of hydrido and phenyl with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(Apc)Qp$ :

5         $R_3$  is selected from the group consisting of hydrido, methyl, trifluoromethyl, and difluoromethyl with the provisos that  $(CHR_3)_n-N(Apc)Qp$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ ;

10      Y is methylene;  
           Z is covalent single bond;  
            $R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro;

15       $R_5$  is selected from the group consisting of 5-bromo-2-fluorophenoxy, 4-chloro-3-ethylphenoxy, 2,3-dichlorophenoxy, 3,4-dichlorophenoxy, 3-difluoromethoxyphenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3-ethylphenoxy, 3-ethyl-5-methylphenoxy, 4-fluoro-3-methylphenoxy,

4-fluorophenoxy, 3-isopropylphenoxy, 3-methylphenoxy, 3-pentafluoroethylphenoxy, 3-tert -butylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 2-(5,6,7,8-tetrahydronaphthyloxy), 3-trifluoromethoxybenzyloxy, 3-trifluoromethoxyphenoxy,

5 3-trifluoromethylbenzyloxy, and 3-trifluoromethylthiophenoxy;

$R_{10}$  is selected from the group consisting of cyclopentyl, 1,1,2,2-tetrafluoroethoxy, 2-furyl, 1,1-bis-trifluoromethyl-1-hydroxymethyl, isobutyl, isopropoxy, pentafluoroethyl, trifluoromethoxy, trifluoromethyl, and trifluoromethylthio;

10  $R_6$  and  $R_{11}$  are independently selected from the group consisting of fluoro and hydrido;

$R_7$  and  $R_{12}$  are independently selected from the group consisting of hydrido and fluoro.

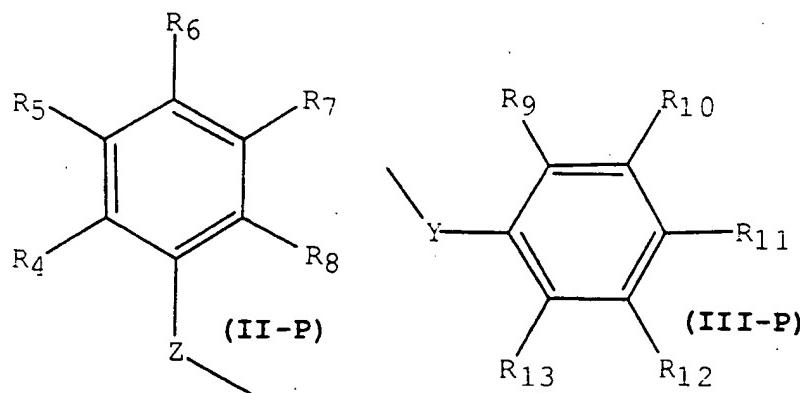
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6. The compound as recited in Claim 3 or a pharmaceutically acceptable salt thereof, wherein:

$n$  is an integer selected from 1 and 2;

20  $R_1$  is selected from the group consisting of haloalkyl and

haloalkoxymethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P);



$R_{16}$  is hydrido;

$R_2$  is selected from the group consisting of hydrido, aryl, alkyl,

- 5 alkenyl, haloalkyl, haloalkoxy, haloalkoxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, and heteroaryl with the proviso that R<sub>2</sub> has a lower

Cahn-Ingold-Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(Ap)Qp;

$R_3$  is selected from the group consisting of hydrido, aryl, alkyl,

alkenyl, haloalkyl, and haloalkoxyalkyl with the provisos that  $(\text{CHR}_2)_n$  -

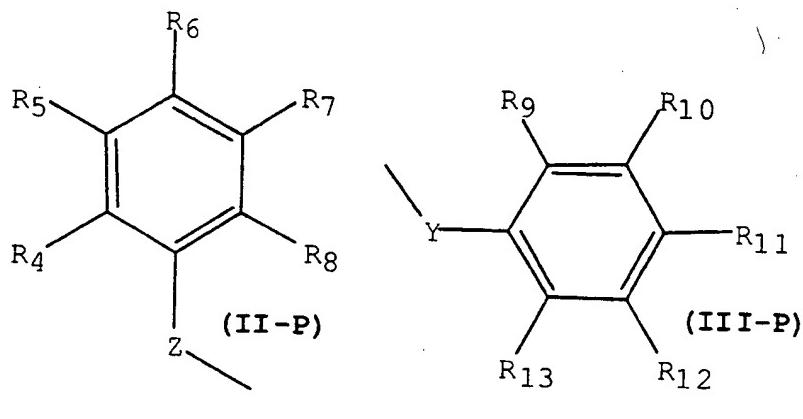
- 10 N(Ap)Qp has a lower Cahn-Ingold-Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-Ingold-Prelog stereochemical system ranking than R<sub>2</sub>;

Y is selected from the group consisting of a covalent single bond, oxy and C1-C2 alkylene:

- 15 Z is a covalent single bond:

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and halo:

- $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy,
- 5     cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, heterocyclyloxy, aralkylaryl, heteroaryloxyalkyl, heteroarylthio, and heteroarylsulfonyl.
- 10    7. The compound as recited in Claim 6 or a pharmaceutically acceptable salt thereof, wherein;
- $n$  is the integer 1;
- $R_{16}$  is hydrido;
- $R_1$  is selected from the group consisting of trifluoromethyl, 1,1,2,2-
- 15    tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CH_3R_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P);



$R_2$  is selected from the group consisting of hydrido, methyl, ethyl, propyl, butyl, vinyl, phenyl, 4-trifluoromethylphenyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, and 2,2,3,3,3-pentafluoropropyl with the proviso that  $R_2$  has a lower Cahn-

- 5 Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ :

$R_3$  is selected from the group consisting of hydrido, phenyl, 4-trifluoromethylphenyl, methyl, ethyl, vinyl, trifluoromethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the provisos that  $(CHR_3)_n-N(Ap)Qp$  has a lower Cahn-

- 10 Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-

Ingold-Prelog stereochemical system ranking than  $R_2$ ;

Y is selected from the group consisting of methylene and ethylene;  
Z is a covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group

- 15 consisting of hydrido and fluoro;

$R_5$  and  $R_{10}$  are independently selected from the group consisting of 4-aminophenoxy, benzoyl, benzyl, benzyloxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy, 4-bromo-2-nitrophenoxy, 3-bromobenzyloxy, 4-bromobenzyloxy, 4-bromophenoxy, 5-bromopyrid-2-yloxy,

- 20 4-butoxyphenoxy, chloro, 3-chlorobenzyl, 2-chlorophenoxy, 4-chlorophenoxy, 4-chloro-3-ethylphenoxy, 3-chloro-4-fluorobenzyl, 3-chloro-4-fluorophenyl, 3-chloro-2-fluorobenzyloxy, 3-chlorobenzyloxy, 4-chlorobenzyloxy, 4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy, 4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy,

- 3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy,  
4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy,  
2-cyanopyrid-3-yloxy, 4-cyanophenoxy, cyclobutoxy, cyclobutyl,  
cyclohexoxy, cyclohexylmethoxy, cyclopentoxy, cyclopentyl,  
5 cyclopentylcarbonyl, cyclopropyl, cyclopropylmethoxy, cyclopropoxy,  
2,3-dichlorophenoxy, 2,4-dichlorophenoxy, 2,4-dichlorophenyl,  
3,5-dichlorophenyl, 3,5-dichlorobenzyl, 3,4-dichlorophenoxy,  
3,4-difluorophenoxy, 2,3-difluorobenzylxy, 2,4-difluorobenzylxy,  
3,4-difluorobenzylxy, 2,5-difluorobenzylxy, 3,5-difluorophenoxy,  
10 3,4-difluorophenyl, 3,5-difluorobenzylxy, 4-difluoromethoxybenzylxy,  
2,3-difluorophenoxy, 2,4-difluorophenoxy, 2,5-difluorophenoxy,  
3,5-dimethoxyphenoxy, 3-dimethylaminophenoxy, 3,5-dimethylphenoxy,  
3,4-dimethylphenoxy, 3,4-dimethylbenzyl, 3,4-dimethylbenzylxy,  
3,5-dimethylbenzylxy, 2,2-dimethylpropoxy, 1,3-dioxan-2-yl,  
15 1,4-dioxan-2-yl, 1,3-dioxolan-2-yl, ethoxy, 4-ethoxyphenoxy,  
4-ethylbenzylxy, 3-ethylphenoxy, 4-ethylaminophenoxy,  
3-ethyl-5-methylphenoxy, fluoro, 4-fluoro-3-methylbenzyl,  
4-fluoro-3-methylphenyl, 4-fluoro-3-methylbenzoyl, 4-fluorobenzylxy,  
2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy, 3-fluorophenoxy,  
20 3-fluoro-2-nitrophenoxy, 2-fluoro-3-trifluoromethylbenzylxy,  
3-fluoro-5-trifluoromethylbenzylxy, 4-fluoro-2-trifluoromethylbenzylxy,  
4-fluoro-3-trifluoromethylbenzylxy, 2-fluorophenoxy, 4-fluorophenoxy,  
2-fluoro-3-trifluoromethylphenoxy, 2-fluorobenzylxy,  
4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy,  
25 4-fluoropyrid-2-yloxy, 2-furyl, 3-furyl, heptafluoropropyl,  
1,1,1,3,3,3-hexafluoropropyl, 2-hydroxy-3,3,3-trifluoropropoxy,  
3-iodobenzylxy, isobutyl, isobutylamino, isobutoxy, 3-isoxazolyl,  
4-isoxazolyl, 5-isoxazolyl, isopropoxy, isopropyl, 4-isopropylbenzylxy,  
3-isopropylphenoxy, 4-isopropylphenoxy, isopropylthio,  
30 4-isopropyl-3-methylphenoxy, 3-isothiazolyl, 4-isothiazolyl,

- 5-isothiazolyl, 3-methoxybenzyl, 4-methoxycarbonylbutoxy,  
3-methoxycarbonylprop-2-enyloxy, 4-methoxyphenyl,  
3-methoxyphenylamino, 4-methoxyphenylamino, 3-methylbenzyloxy,  
4-methylbenzyloxy, 3-methylphenoxy, 3-methyl-4-methylthiophenoxy.
- 5 4-methylphenoxy, 1-methylpropoxy, 2-methylpyrid-5-yloxy,  
4-methylthiophenoxy, 2-naphthyoxy, 2-nitrophenoxy, 4-nitrophenoxy,  
3-nitrophenyl, 4-nitrophenylthio, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl,  
pentafluoroethyl, pentafluoroethylthio, 2,2,3,3,3-pentafluoropropyl,  
1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl, phenoxy,
- 10 phenylamino, 1-phenylethoxy, phenylsulfonyl, 4-propanoylphenoxy,  
propoxy, 4-propylphenoxy, 4-propoxyphenoxy, thiophen-3-yl, *sec*-butyl,  
4-*sec*-butylphenoxy, *tert*-butoxy, 3-*tert*-butylphenoxy, 4-*tert*-butylphenoxy,  
1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl,  
2-(5,6,7,8-tetrahydronaphthyoxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl,
- 15 thiophen-2-yl, 2,3,5-trifluorobenzyloxy, 2,2,2-trifluoroethoxy,  
2,2,2-trifluoroethyl, 3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy,  
3-trifluoromethoxybenzyloxy, 4-trifluoromethoxybenzyloxy,  
3-trifluoromethoxyphenoxy, 4-trifluoromethoxyphenoxy, trifluoromethyl,  
3-trifluoromethylbenzyloxy, 4-trifluoromethylbenzyloxy,
- 20 2,4-bis-trifluoromethylbenzyloxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl,  
3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzyloxy,  
4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy,  
3-trifluoromethylphenyl, 3-trifluoromethylthiobenzyloxy,  
4-trifluoromethylthiobenzyloxy, 2,3,4-trifluorophenoxy,
- 25 2,3,4-trifluorophenyl, 2,3,5-trifluorophenoxy, 3,4,5-trimethylphenoxy,  
3-difluoromethoxyphenoxy, 3-pentafluoroethylphenoxy,  
3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 3-trifluoromethylthiophenoxy, and  
trifluoromethylthio;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of chloro, fluoro, hydrido, pentafluoroethyl, 1,1,2,2-tetrafluoroethoxy, trifluoromethyl, and trifluoromethoxy;

$R_7$  and  $R_{12}$  are independently selected from the group consisting of  
5 hydrido, fluoro, and trifluoromethyl.

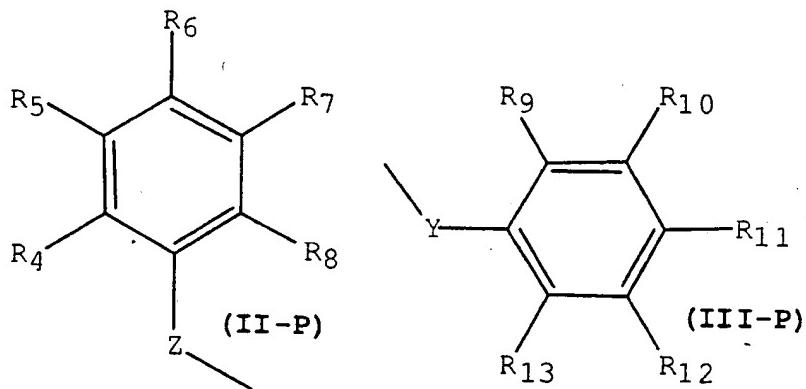
8. The compound as recited in Claim 7 or a pharmaceutically acceptable salt thereof, wherein:

10

$n$  is the integer 1;

$R_{16}$  is hydrido;

$R_1$  is selected from the group consisting of trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl,  
15 chlorodifluoromethyl, and pentafluoroethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P);



$R_2$  is selected from the group consisting of hydrido, methyl, ethyl, phenyl, 4-trifluoromethylphenyl, trifluoromethoxymethyl, 1,1,2,2-tetrafluoroethoxymethyl, difluoromethyl, and 2,2,3,3,3-pentafluoropropyl with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog

5 system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ :

$R_3$  is selected from the group consisting of hydrido, phenyl, 4-trifluoromethylphenyl, methyl, trifluoromethyl, difluoromethyl, and chlorodifluoromethyl with the provisos that  $(CHR_3)_n-N(Ap)Qp$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher

10 Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ :

$Y$  is methylene;

$Z$  is a covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro;

15  $R_5$  and  $R_{10}$  are independently selected from the group consisting of benzyloxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy, 3-bromobenzyloxy, 4-bromophenoxy, 4-butoxyphenoxy, 3-chlorobenzyloxy, 2-chlorophenoxy, 4-chloro-3-ethylphenoxy, 4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy,

20 4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy, 3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy, 4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy, cyclobutoxy, cyclobutyl, cyclohexylmethoxy, cyclopentoxy, cyclopentyl, cyclopentylcarbonyl, cyclopropylmethoxy, 2,3-dichlorophenoxy,

- 2.4-dichlorophenoxy, 2.4-dichlorophenyl, 3.5-dichlorophenyl,  
3.5-dichlorobenzyl, 3.4-dichlorophenoxy, 3.4-difluorophenoxy,  
2.3-difluorobenzylloxy, 3.5-difluorobenzylloxy, difluoromethoxy,  
3.5-difluorophenoxy, 3.4-difluorophenyl, 2.3-difluorophenoxy,  
5 2.4-difluorophenoxy, 2.5-difluorophenoxy, 3.5-dimethoxyphenoxy,  
3-dimethylaminophenoxy, 3.4-dimethylbenzylloxy, 3.5-dimethylbenzylloxy,  
3.5-dimethylphenoxy, 3.4-dimethylphenoxy, 1.3-dioxolan-2-yl,  
3-ethylbenzylloxy, 3-ethylphenoxy, 4-ethylaminophenoxy,  
3-ethyl-5-methylphenoxy, 4-fluoro-3-methylbenzyl, 4-fluorobenzylloxy,  
10 2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy, 3-fluorophenoxy,  
3-fluoro-2-nitrophenoxy, 2-fluoro-3-trifluoromethylbenzylloxy,  
3-fluoro-5-trifluoromethylbenzylloxy, 2-fluorophenoxy, 4-fluorophenoxy,  
2-fluoro-3-trifluoromethylphenoxy, 2-fluorobenzylloxy,  
4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy, 2-furyl, 3-furyl,  
15 heptafluoropropyl, 1,1,1,3,3,3-hexafluoropropyl,  
2-hydroxy-3,3,3-trifluoropropoxy, isobutoxy, isobutyl, 3-isoxazolyl,  
4-isoxazolyl, 5-isoxazolyl, isopropoxy,  
3-isopropylbenzylloxy, 3-isopropylphenoxy, isopropylthio,  
4-isopropyl-3-methylphenoxy, 3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl,  
20 3-methoxybenzyl, 4-methoxyphenylamino, 3-methylbenzylloxy,  
4-methylbenzylloxy, 3-methylphenoxy, 3-methyl-4-methylthiophenoxy,  
4-methylphenoxy, 1-methylpropoxy, 2-methylpyrid-5-yloxy,  
4-methylthiophenoxy, 2-naphthylloxy, 2-nitrophenoxy, 4-nitrophenoxy,  
3-nitrophenyl, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl, pentafluoroethyl,  
25 pentafluoroethylthio, 2,2,3,3,3-pentafluoropropyl,  
1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl, phenoxy,  
phenylamino, 1-phenylethoxy, 4-propylphenoxy, 4-propoxypheoxy,  
thiophen-3-yl, tert -butoxy, 3-tert -butylphenoxy, 4-tert -butylphenoxy,  
1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl,

- 2-(5,6,7,8-tetrahydronaphthoxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl,  
thiophen-2-yl, 2,2,2-trifluoroethoxy, 2,2,2-trifluoroethyl,  
3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy,  
3-trifluoromethoxybenzyloxy, 4-trifluoromethoxybenzyloxy.
- 5    4-trifluoromethoxyphenoxy, 3-trifluoromethoxyphenoxy, trifluoromethyl,  
3-trifluoromethylbenzyloxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl,  
3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzyloxy,  
4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy,  
3-trifluoromethylphenyl, 2,3,4-trifluorophenoxy, 2,3,5-trifluorophenoxy,
- 10   3,4,5-trimethylphenoxy, 3-difluoromethoxyphenoxy,  
3-pentafluoroethylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy,  
3-trifluoromethylthiophenoxy, 3-trifluoromethylthiobenzyloxy, and  
trifluoromethylthio;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of  
15   chloro, fluoro, hydrido, pentafluoroethyl, 1,1,2,2-tetrafluoroethoxy, and  
trifluoromethyl;

$R_7$  and  $R_{12}$  are independently selected from the group consisting of  
hydrido, fluoro, and trifluoromethyl.

20

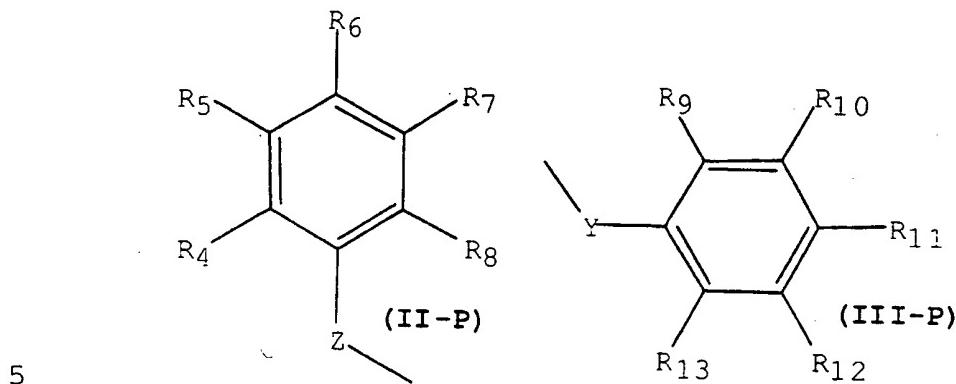
9. The compound as recited in Claim 6 or a pharmaceutically acceptable salt,  
wherein;

25         $n$  is the integer 1;

$R_{16}$  is hydrido;

$R_1$  is haloalkyl with the proviso that  $R_1$  has a higher Cahn-Ingold-

Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$   
wherein Ap is Formula (II-P) and Qp is Formula (III-P);



5

$R_2$  is selected from the group consisting of hydrido, alkyl, haloalkyl,  
aryl, and haloalkoxy with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog  
system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ ;

10         $R_3$  is selected from the group consisting of hydrido, alkyl, and  
haloalkyl with the provisos that  $(CHR_3)_n-N(Ap)Qp$  has a lower Cahn-Ingold-  
Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-  
Prelog stereochemical system ranking than  $R_2$ ;

Y is a covalent single bond;

15        Z is covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group  
consisting of hydrido and halo;

$R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy, cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, heterocyclyloxy, aralkylaryl, heteroaryloxyalkyl, heteroarylthio, and heteroarylsulfonyl.

5       $R_5$  cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, heterocyclyloxy, aralkylaryl, heteroaryloxyalkyl, heteroarylthio, and heteroarylsulfonyl.

10     10. The compound as recited in Claim 9 or a pharmaceutically acceptable salt thereof, wherein:

$n$  is the integer 1;

$R_1$  is selected from the group consisting of trifluoromethyl,

15    chlorodifluoromethyl, and pentafluoroethyl;

$R_{16}$  is hydrido;

$R_2$  is hydrido;

$R_3$  is hydrido;

$Y$  is a covalent single bond;

20     $Z$  is a covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro;

$R_5$  is selected from the group consisting of 5-bromo-2-fluorophenoxy,

4-chloro-3-ethylphenoxy, 2,3-dichlorophenoxy, 3,4-dichlorophenoxy, 3-

25    difluoromethoxyphenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3-ethylphenoxy, 3-ethyl-5-methylphenoxy, 4-fluoro-3-methylphenoxy,

4-fluorophenoxy, 3-isopropylphenoxy, 3-methylphenoxy, 3-pentafluoroethylphenoxy, 3-tert -butylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 2-(5,6,7,8-tetrahydronaphthyloxy), 3-trifluoromethoxybenzyloxy, 3-trifluoromethoxyphenoxy,

5 3-trifluoromethylbenzyloxy, and 3-trifluoromethylthiophenoxy;

$R_{10}$  is selected from the group consisting of 1,1,2,2-tetrafluoroethoxy, pentafluoroethyl, and trifluoromethyl;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of fluoro and hydrido;

10  $R_7$  and  $R_{12}$  are independently selected from the group consisting of hydrido and fluoro.

11. The compound as recited in Claim 6 or a pharmaceutically acceptable salt, wherein;

15

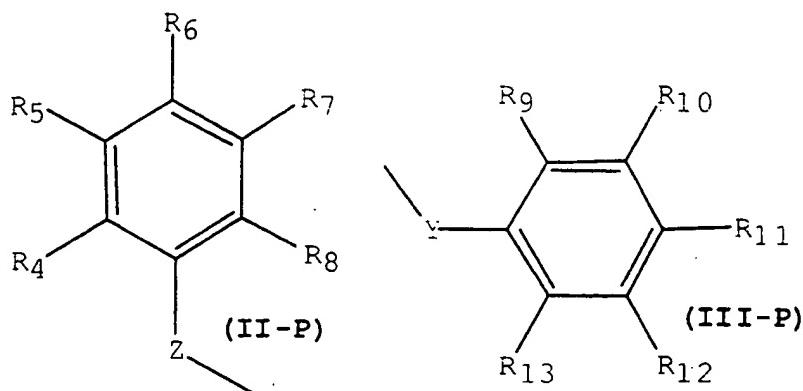
$n$  is the integer 1;

$R_{16}$  is hydrido;

$R_1$  is haloalkyl with the proviso that  $R_1$  has a higher Cahn-Ingold-

Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$

20 wherein Ap is Formula (II-P) and Qp is Formula (III-P);



R<sub>1</sub> is selected from the group consisting of hydrido, alkyl, haloalkyl,

aryl, and haloalkoxy with the proviso that R<sub>1</sub> has a lower Cahn-Ingold-Prelog

5 system ranking than both  $R_1$  and  $(CHR_3)_n-N(Ap)Qp$ :

$R_3$  is selected from the group consisting of hydrido, alkyl, and

haloalkyl with the provisos that  $(\text{CH}_3)_n\text{-N}(\text{Ap})\text{Qp}$  has a lower Cahn-Ingold-

Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-Ingold-

Prelog stereochemical system ranking than R<sub>2</sub>:

10 Y is oxy;

Z is a covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and halo;

$R_5, R_6, R_7, R_{10}, R_{11}$ , and  $R_{12}$  are independently selected from the

group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy, cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhalo-

heteroaralkoxy, heterocyclyoxy, aralkylaryl, heteroaryloxyalkyl, heteroarylthio, and heteroarylsulfonyl.

- 5 12. The compound as recited in Claim 11 or a pharmaceutically acceptable salt thereof, wherein:

n is the integer 1;

- R<sub>1</sub> is selected from the group consisting of trifluoromethyl,  
10 chlorodifluoromethyl, and pentafluoroethyl;

R<sub>16</sub> is hydrido;

R<sub>2</sub> is hydrido;

R<sub>3</sub> is hydrido;

Y is oxy;

- 15 Z is a covalent single bond;

R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group  
consisting of hydrido and fluoro;

- R<sub>5</sub> is selected from the group consisting of 5-bromo-2-fluorophenoxy,  
4-chloro-3-ethylphenoxy, 2,3-dichlorophenoxy, 3,4-dichlorophenoxy, 3-  
2.0 difluoromethoxyphenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy,  
3-ethylphenoxy, 3-ethyl-5-methylphenoxy, 4-fluoro-3-methylphenoxy,  
4-fluorophenoxy, 3-isopropylphenoxy, 3-methylphenoxy, 3-  
pentafluoroethylphenoxy, 3-tert -butylphenoxy, 3-(1,1,2,2-  
tetrafluoroethoxy)phenoxy, 2-(5,6,7,8-tetrahydronaphthoxy),  
25 3-trifluoromethoxybenzyloxy, 3-trifluoromethoxyphenoxy,  
3-trifluoromethylbenzyloxy, and 3-trifluoromethylthiophenoxy;

$R_{10}$  is selected from the group consisting of 1,1,2,2-tetrafluoroethoxy, pentafluoroethyl, and trifluoromethyl;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of fluoro and hydrido;

5        $R_7$  and  $R_{12}$  are independently selected from the group consisting of hydrido and fluoro.

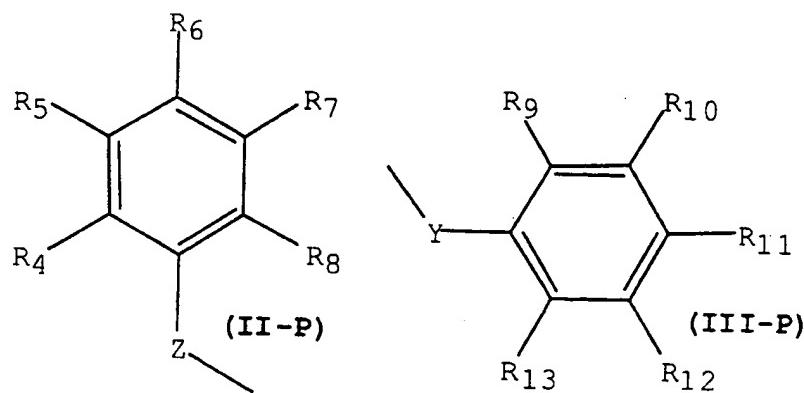
13. The compound as recited in Claim 6 or a pharmaceutically acceptable  
10 salt, wherein:

$n$  is the integer 1;

$R_{16}$  is hydrido;

$R_1$  is haloalkyl with the proviso that  $R_1$  has a higher Cahn-Ingold-

15       Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(Ap)Qp$   
wherein Ap is Formula (II-P) and Qp is Formula (III-P);



R<sub>2</sub> is selected from the group consisting of hydrido, alkyl, haloalkyl, aryl, and haloalkoxy with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(Ap)Qp;

- R<sub>3</sub> is selected from the group consisting of hydrido, alkyl, and  
5       haloalkyl with the provisos that (CHR<sub>3</sub>)<sub>n</sub>-N(Ap)Qp has a lower Cahn-Ingold-  
          Prelog stereochemical system ranking than R<sub>1</sub> and a higher Cahn-Ingold-  
          Prelog stereochemical system ranking than R<sub>2</sub>:

Y is methylene;

Z is a covalent single bond;

- 10     R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group  
          consisting of hydrido and halo;

- R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>10</sub>, R<sub>11</sub>, and R<sub>12</sub> are independently selected from the  
group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl,  
alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy,  
15      heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy,  
          cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl,  
          heteroaralkoxy, heterocyclxy, aralkylaryl, heteroaryloxyalkyl,  
          heteroarylthio, and heteroarylsulfonyl.

- 20      14. The compound as recited in Claim 13 or a pharmaceutically acceptable  
salt thereof, wherein;

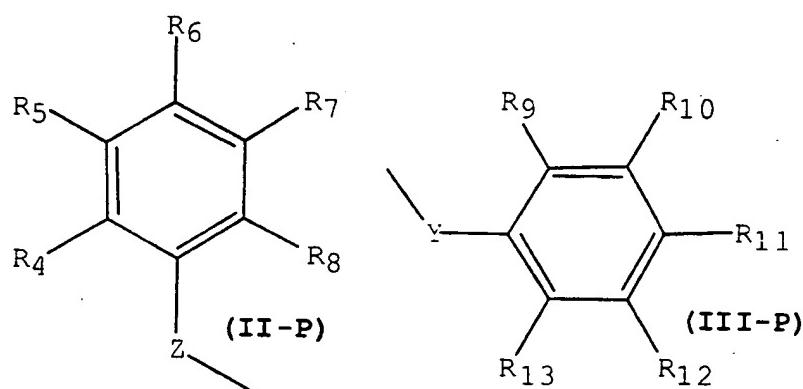
n is the integer 1;

$R_1$  is selected from the group consisting of trifluoromethyl,

chlorodifluoromethyl, and pentafluoroethyl with the proviso that  $R_1$  has a

higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and

$(CH_3)_n-N(Ap)Qp$  wherein Ap is Formula (II-P) and Qp is Formula (III-P):



5

$R_{16}$  is hydrido;

$R_2$  is selected from the group consisting of hydrido and phenyl with

the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both

10  $R_1$  and  $(CH_3)_n-N(Ap)Qp$ ;

$R_3$  is selected from the group consisting of hydrido, methyl, trifluoromethyl, and difluoromethyl with the provisos that  $(CH_3)_n-N(Ap)Qp$

has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a

higher Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ ;

15 Y is methylene;

Z is a covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro;

$R_5$  is selected from the group consisting of 5-bromo-2-fluorophenoxy,

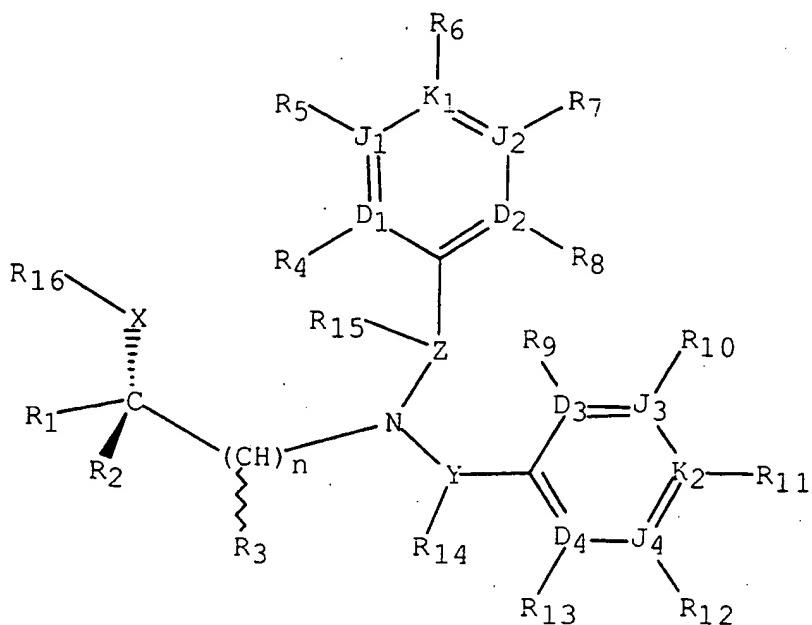
- 4-chloro-3-ethylphenoxy, 2,3-dichlorophenoxy, 3,4-dichlorophenoxy, 3-difluoromethoxyphenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3-ethylphenoxy, 3-ethyl-5-methylphenoxy, 4-fluoro-3-methylphenoxy, 4-fluorophenoxy, 3-isopropylphenoxy, 3-methylphenoxy, 3-pentafluoroethylphenoxy, 3-tert-butylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 2-(5,6,7,8-tetrahydronaphthyloxy), 10 3-trifluoromethoxybenzyloxy, 3-trifluoromethoxyphenoxy, 3-trifluoromethylbenzyloxy, and 3-trifluoromethylthiophenoxy;

$R_{10}$  is selected from the group consisting of cyclopentyl, 1,1,2,2-tetrafluoroethoxy, 2-furyl, 1,1-bis-trifluoromethyl-1-hydroxymethyl, isobutyl, isoproxy, pentafluoroethyl, trifluoromethoxy, trifluoromethyl, and 15 trifluoromethylthio;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of fluoro and hydrido;

$R_7$  and  $R_{12}$  are independently selected from the group consisting of hydrido and fluoro.

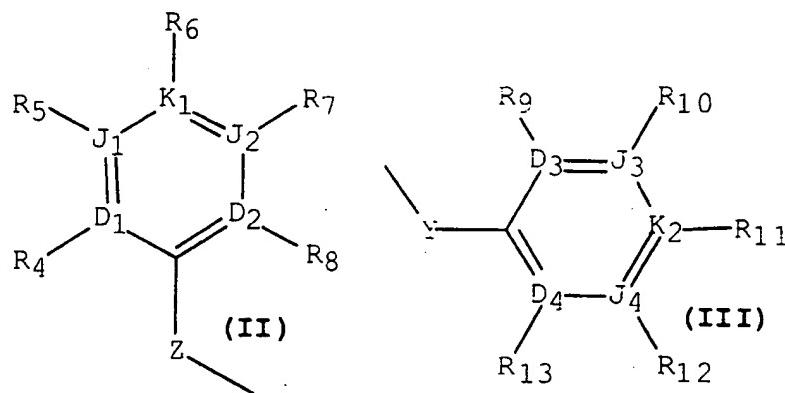
15. A compound as recited in Claim 2 having the formula:



or a pharmaceutically acceptable salt thereof, wherein;

- D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are each carbon with the proviso that at least one  
 5 of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is selected from the group consisting of O, S, and N,  
 wherein D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group  
 consisting of C, N, O, S and covalent bond with the provisos that no more  
 than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is a covalent bond, no more than one of D<sub>3</sub>,  
 D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is O, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is S, one of  
 10 D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> must be a covalent bond when two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and  
 K<sub>2</sub> are O and S, and no more than four of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are N;  
 D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are independently selected from the group  
 consisting of C, O, S, N and covalent bond with the provisos that D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>,  
 J<sub>4</sub> and K<sub>2</sub> are each carbon and at least one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is selected

- from the group consisting of O, S, and N wherein, when D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are selected from the group consisting of C, O, S, covalent bond, and N, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is a covalent bond, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is O, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is S.
- 5 one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> must be a covalent bond when two of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are O and S, and no more than four of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are N; n is an integer selected from 1 and 2; X is oxy;
- R<sub>16</sub> is selected from the group consisting of hydrido and a spacer
- 10 selected from the group consisting of a covalent single bond and a linear spacer moiety having a chain length of 1 to 4 atoms linked to the point of bonding of any aromatic substituent selected from the group consisting of R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> to form a heterocyclyl ring having from 5 through 10 contiguous members;
- 15 R<sub>1</sub> is selected from the group consisting of haloalkyl and haloalkoxymethyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q wherein A is Formula (II) and Q is Formula (III);



$R_2$  is selected from the group consisting of hydrido, aryl, alkyl,

alkenyl, haloalkyl, haloalkoxy, haloalkoxalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, and heteroaryl with the proviso that R<sub>2</sub> has a lower

- 5 Cahn-Ingold-Prelog system ranking than both R<sub>1</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(Ap)Qp:

$R_3$  is selected from the group consisting of hydrido, aryl, alkyl, alkenyl, haloalkyl, and haloalkoxyalkyl with the provisos that  $(CHR_3)_n - N(Ap)Qp$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than

10 R<sub>2</sub>;

Y is selected from the group consisting of a covalent single bond,  $(\text{CH}_2)_q$  wherein q is an integer selected from 1 and 2, and  $(\text{CH}_2)_j\text{-O-(CH}_2)_k$  wherein j and k are integers independently selected from 0 and 1;

Z is selected from the group consisting of covalent single bond:

- 15  $(CH_2)_q$  wherein q is an integer selected from 1 and 2, and  $(CH_2)_j-O-(CH_2)_k$   
wherein j and k are integers independently selected from 0 and 1;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido, halo, haloalkyl, and alkyl :

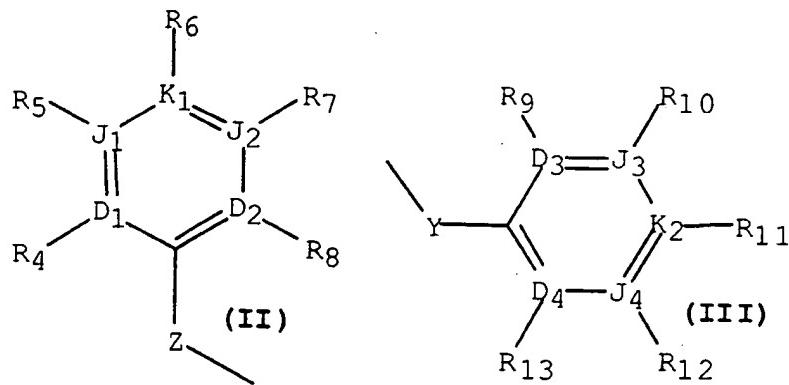
- $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, carboxy, heteroaralkylthio, heteroaralkoxy,
- 5     cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclyoxy, aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocycl, perhaloaralkyl, aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl, halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl, cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroarylarnino, N-
- 10    heteroarylarnino-N-alkylarnino, heteroarylarninoalkyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy, cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy, cycloalkenyloxyalkyl, cycloalkylenedioxy, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenyloxy, halocycloalkenyloxyalkyl,
- 15    hydroxy, amino, thio, nitro, lower alkylarnino, alkylthio, alkylthioalkyl, arylarnino, aralkylarnino, arylthio, arylthioalkyl, heteroaralkoxyalkyl, alkylsulfinyl, alkylsulfinylalkyl, arylsulfinylalkyl, arylsulfonylalkyl, heteroarylsulfinylalkyl, heteroarylsulfonylalkyl, alkylsulfonyl, alkylsulfonylalkyl, haloalkylsulfinylalkyl, haloalkylsulfonylalkyl,
- 20    alkylsulfonamido, alkylaminosulfonyl, amidosulfonyl, monoalkyl amidosulfonyl, dialkyl amidosulfonyl, monoaryl amidosulfonyl, arylsulfonamido, diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl, arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl, heteroarylsulfonyl, heterocyclsulfonyl, heterocyclthio, alkanoyl, alkenoyl,
- 25    aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl, alkyl, alkenyl, alkynyl, alkenyloxy, alkenyloxyalky, alkylenedioxy, haloalkylenedioxy, cycloalkyl, cycloalkylalkanoyl, cycloalkenyl, lower cycloalkylalkyl, lower cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy, hydroxyhaloalkyl, hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl,

- haloalkoxyalkyl, aryl, heteroaralkynyl, aryloxy, aralkoxy, aryloxyalkyl,  
saturated heterocyclyl, partially saturated heterocyclyl, heteroaryl,  
heteroaryloxy, heteroaryloxyalkyl, heteroaralkyl, arylalkenyl,  
heteroarylalkenyl, carboxyalkyl, carboalkoxy, alkoxycarboxamido.
- 5     alkylamidocarbonylamido, arylamidocarbonylamido, carboalkoxyalkyl,  
carboalkoxyalkenyl, carboralkoxy, carboxamido, carboxamidoalkyl, cyano,  
carbohaloalkoxy, phosphono, phosphonoalkyl, diaralkoxyphosphono, and  
diaralkoxyphosphonoalkyl;
- R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, R<sub>7</sub> and R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and  
10    R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> are independently selected to form spacer  
pairs wherein a spacer pair is taken together to form a linear moiety having  
from 3 through 6 contiguous atoms connecting the points of bonding of said  
spacer pair members to form a ring selected from the group consisting of a  
cycloalkenyl ring having 5 through 8 contiguous members, a partially  
15    saturated heterocyclyl ring having 5 through 8 contiguous members, a  
heteroaryl ring having 5 through 6 contiguous members, and an aryl with the  
provisos that no more than one of the group consisting of spacer pairs R<sub>4</sub> and  
R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub>, is used at the same time and that  
no more than one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and  
20    R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> is used at the same time.
16. The compound as recited in Claim 15 or a pharmaceutically acceptable  
salt thereof, wherein;

- D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are each carbon with the proviso that at least one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is selected from the group consisting of O, S, and N, wherein D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is a covalent bond, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is O, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is S, one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> must be a covalent bond when two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are O and S, and no more than four of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are N; D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are independently selected from the group consisting of C, O, S, N and covalent bond with the provisos that D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are each carbon and at least one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is selected from the group consisting of O, S, and N wherein, when D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are selected from the group consisting of C, O, S, covalent bond, and N, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is a covalent bond, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is O, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is S, one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> must be a covalent bond when two of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are O and S, and no more than four of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are N; n is the integer 1; X is oxy;

$R_{16}$  is taken together with  $R_4$ ,  $R_8$ ,  $R_9$ , or  $R_{13}$  to form a spacer selected from the group consisting of a covalent single bond,  $CH_2$ ,  $CH(CH_3)$ ,  $CF_2$ ,  $C(O)$ ,  $C(S)$ , and  $SO_2$ ;

- $R_1$  is selected from the group consisting of trifluoromethyl, 1,1,2,2-
- 5      tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(A)Q$  wherein A is Formula (II) and Q is Formula (III);



- 10       $R_2$  is selected from the group consisting of hydrido, phenyl, 4-trifluoromethylphenyl, vinyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, and 2,2,3,3,3-pentafluoropropyl with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(A)Q$ ;
- 15       $R_3$  is selected from the group consisting of hydrido, methyl, ethyl, vinyl, phenyl, 4-trifluoromethylphenyl, trifluoromethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and

pentafluoroethyl with the provisos that  $(\text{CH}_3)_n\text{-N}(\text{A})\text{Q}$  has a lower Cahn-

Ingold-Prelog stereochemical system ranking than  $\text{R}_1$  and a higher Cahn-

Ingold-Prelog stereochemical system ranking than  $\text{R}_2$ :

$\text{Y}$  is selected from the group consisting of covalent single bond, oxy,

- 5 methyleneoxy, methylene, and ethylene;

$\text{Z}$  is selected from the group consisting of covalent single bond, oxy,  
methyleneoxy, methylene, and ethylene;

$\text{R}_4$ ,  $\text{R}_8$ ,  $\text{R}_9$ , and  $\text{R}_{13}$  are independently selected from the group  
consisting of hydrido and fluoro;

- 10  $\text{R}_5$  and  $\text{R}_{10}$  are independently selected from the group consisting of 4-aminophenoxy, benzoyl, benzyl, benzyloxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy, 4-bromo-2-nitrophenoxy, 3-bromobenzyloxy, 4-bromobenzyloxy, 4-bromophenoxy, 5-bromopyrid-2-yloxy, 4-butoxyphenoxy, chloro, 3-chlorobenzyl, 2-chlorophenoxy,
- 15 4-chlorophenoxy, 4-chloro-3-ethylphenoxy, 3-chloro-4-fluorobenzyl, 3-chloro-4-fluorophenyl, 3-chloro-2-fluorobenzyloxy, 3-chlorobenzyloxy, 4-chlorobenzyloxy, 4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy, 4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy, 3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy,
- 20 4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy, 2-cyanopyrid-3-yloxy, 4-cyanophenoxy, cyclobutoxy, cyclobutyl, cyclohexoxy, cyclohexylmethoxy, cyclopentoxy, cyclopentyl, cyclopentylcarbonyl, cyclopropyl, cyclopropylmethoxy, cyclopropoxy, 2,3-dichlorophenoxy, 2,4-dichlorophenoxy, 2,4-dichlorophenyl,
- 25 3,5-dichlorophenyl, 3,5-dichlorobenzyl, 3,4-dichlorophenoxy, 3,4-difluorophenoxy, 2,3-difluorobenzyloxy, 2,4-difluorobenzyloxy, 3,4-difluorobenzyloxy, 2,5-difluorobenzyloxy, 3,5-difluorophenoxy,

- 3,4-difluorophenyl, 3,5-difluorobenzylloxy, 4-difluoromethoxybenzylloxy,  
2,3-difluorophenoxy, 2,4-difluorophenoxy, 2,5-difluorophenoxy,  
3,5-dimethoxyphenoxy, 3-dimethylaminophenoxy, 3,5-dimethylphenoxy.  
3,4-dimethylphenoxy, 3,4-dimethylbenzyl, 3,4-dimethylbenzylloxy.
- 5    3,5-dimethylbenzylloxy, 2,2-dimethylpropoxy, 1,3-dioxan-2-yl,  
1,4-dioxan-2-yl, 1,3-dioxolan-2-yl, ethoxy, 4-ethoxyphenoxy,  
4-ethylbenzylloxy, 3-ethylphenoxy, 4-ethylaminophenoxy,  
3-ethyl-5-methylphenoxy, fluoro, 4-fluoro-3-methylbenzyl,  
4-fluoro-3-methylphenyl, 4-fluoro-3-methylbenzoyl, 4-fluorobenzylloxy.
- 10   2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy, 3-fluorophenoxy,  
3-fluoro-2-nitrophenoxy, 2-fluoro-3-trifluoromethylbenzylloxy,  
3-fluoro-5-trifluoromethylbenzylloxy, 4-fluoro-2-trifluoromethylbenzylloxy,  
4-fluoro-3-trifluoromethylbenzylloxy, 2-fluorophenoxy, 4-fluorophenoxy,  
2-fluoro-3-trifluoromethylphenoxy, 2-fluorobenzylloxy,
- 15   4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy,  
4-fluoropyrid-2-yloxy, 2-furyl, 3-furyl, heptafluoropropyl,  
1,1,1,3,3,3-hexafluoropropyl, 2-hydroxy-3,3,3-trifluoropropoxy,  
3-iodobenzylloxy, isobutyl, isobutylamino, isobutoxy, 3-isoxazolyl,  
4-isoxazolyl, 5-isoxazolyl, isopropoxy, isopropyl, 4-isopropylbenzylloxy,
- 20   3-isopropylphenoxy, 4-isopropylphenoxy, isopropylthio,  
4-isopropyl-3-methylphenoxy, 3-isothiazolyl, 4-isothiazolyl,  
5-isothiazolyl, 3-methoxybenzyl, 4-methoxycarbonylbutoxy,  
3-methoxycarbonylprop-2-enyloxy, 4-methoxyphenyl,  
3-methoxyphenylamino, 4-methoxyphenylamino, 3-methylbenzylloxy,
- 25   4-methylbenzylloxy, 3-methylphenoxy, 3-methyl-4-methylthiophenoxy,  
4-methylphenoxy, 1-methylpropoxy, 2-methylpyrid-5-yloxy,  
4-methylthiophenoxy, 2-naphthylloxy, 2-nitrophenoxy, 4-nitrophenoxy,  
3-nitrophenyl, 4-nitrophenylthio, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl,  
pentafluoroethyl, pentafluoroethylthio, 2,2,3,3,3-pentafluoropropyl,

- 1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl, phenoxy, phenylamino, 1-phenylethoxy, phenylsulfonyl, 4-propanoylphenoxy, propoxy, 4-propylphenoxy, 4-propoxyphenoxy, thiophen-3-yl, *sec*-butyl, 4-*sec*-butylphenoxy, *tert*-butoxy, 3-*tert*-butylphenoxy, 4-*tert*-butylphenoxy.
- 5 1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl, 2-(5,6,7,8-tetrahydronaphthyloxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl, thiophen-2-yl, 2,3,5-trifluorobenzylxy, 2,2,2-trifluoroethoxy, 2,2,2-trifluoroethyl, 3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy, 3-trifluoromethoxybenzylxy, 4-trifluoromethoxybenzylxy,
- 10 3-trifluoromethoxyphenoxy, 4-trifluoromethoxyphenoxy, trifluoromethyl, 3-trifluoromethylbenzylxy, 4-trifluoromethylbenzylxy, 2,4-bis-trifluoromethylbenzylxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl, 3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzylxy, 4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy,
- 15 3-trifluoromethylphenyl, 3-trifluoromethylthiobenzylxy, 4-trifluoromethylthiobenzylxy, 2,3,4-trifluorophenoxy, 2,3,4-trifluorophenyl, 2,3,5-trifluorophenoxy, 3,4,5-trimethylphenoxy, 3-difluoromethoxyphenoxy, 3-pentafluoroethylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 3-trifluoromethylthiophenoxy, and
- 20 trifluoromethylthio;

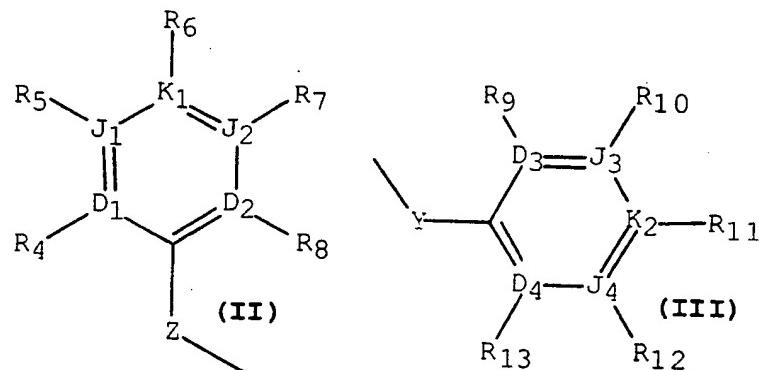
$R_6$  and  $R_{11}$  are independently selected from the group consisting of chloro, fluoro, hydrido, difluoromethoxy, trifluoromethyl, trifluoromethoxy, pentafluoroethyl, and 1,1,2,2-tetrafluoroethoxy;

$R_7$  and  $R_{12}$  are independently selected from the group consisting of  
25 hydrido, fluoro, and trifluoromethyl.

17. The compound as recited in Claim 15 or a pharmaceutically acceptable salt thereof, wherein:

- D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are each carbon with the proviso that at least one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is selected from the group consisting of O, S, and N, wherein D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is a covalent bond, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is O, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is S, one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> must be a covalent bond when two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are O and S, and no more than four of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are N;
- D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are selected from the group consisting of C, O, S, N and covalent bond with the provisos that D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are each carbon and at least one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is selected from the group consisting of O, S, and N wherein, when D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are selected from the group consisting of C, O, S, covalent bond, and N, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is a covalent bond, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is O, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is S, one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> must be a covalent bond when two of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are O and S, and no more than four of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are N;
- n is an integer selected from 1 and 2;
- X is oxy;

$R_1$  is selected from the group consisting of haloalkyl and haloalkoxymethyl with the proviso that  $R_1$  has a higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(A)Q$  wherein A is Formula (II) and Q is Formula (III):



5

$R_{16}$  is hydrido;

$R_2$  is selected from the group consisting of hydrido, aryl, alkyl, alkenyl, haloalkyl, and haloalkoxyalkyl with the proviso that  $R_2$  has a lower Cahn-Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(A)Q$ ;

10        $R_3$  is selected from the group consisting of hydrido, aryl, alkyl, alkenyl, haloalkyl, and haloalkoxyalkyl with the provisos that  $(CHR_3)_n-N(A)Q$  has a lower Cahn-Ingold-Prelog stereochemical system ranking than  $R_1$  and a higher Cahn-Ingold-Prelog stereochemical system ranking than  $R_2$ ;

15       Y is selected from the group consisting of a covalent single bond, oxy and C1-C2 alkylene;

Z is a covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and halo;

$R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl,

- 5 alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy, cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, heterocyclyoxy, aralkylaryl, heteroaryloxyalkyl, heteroarylthio, and heteroarylsulfonyl.

10

18. The compound as recited in Claim 17 and pharmaceutically acceptable salts, wherein:

15  $n$  is the integer 1;

$X$  is oxy;

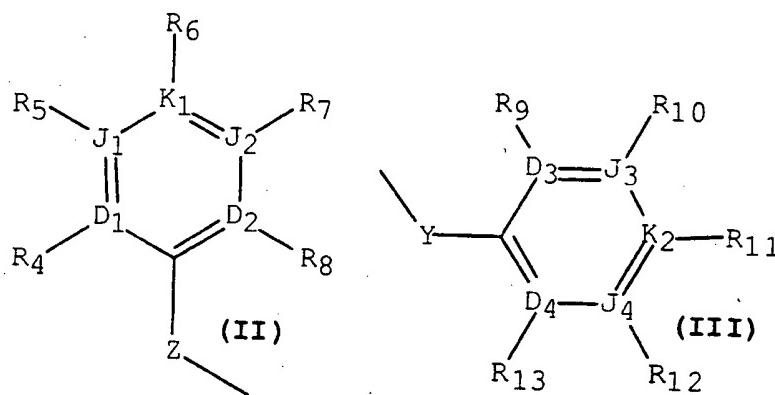
$R_{16}$  is hydrido;

$R_1$  is selected from the group consisting of trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl,

20 chlorodifluoromethyl, and pentafluoroethyl with the proviso that  $R_1$  has a

higher Cahn-Ingold-Prelog stereochemical system ranking than both  $R_2$  and

$(CHR_3)_n-N(A)Q$  wherein A is Formula (II) and Q is Formula (III);



$R_2$  is selected from the group consisting of hydrido, methyl, ethyl,

propyl, butyl, vinyl, phenyl, 4-trifluoromethylphenyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, and

5 2,2,3,3,3-pentafluoropropyl with the proviso that R<sub>2</sub> has a lower Cahn-

Ingold-Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(A)Q$ ;

$R_3$  is selected from the group consisting of hydrido, phenyl, 4-trifluoromethylphenyl, methyl, ethyl, vinyl, trifluoromethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and

10 pentafluoroethyl with the provisos that  $(\text{CH}_2)_n\text{-N}(\text{A})\text{O}$  has a lower Cahn-

Ingold-Prelog stereochemical system ranking than R, and a higher Cahn-

### Ingold-Prelog stereochemical system ranking than R<sub>1</sub>:

Y is selected from the group consisting of a single covalent bond, methylene, ethylene, and oxy:

15 Z is covalent single bond:

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro:

- $R_5$  and  $R_{10}$  are independently selected from the group consisting of 4-aminophenoxy, benzoyl, benzyl, benzyloxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy, 4-bromo-2-nitrophenoxy, 3-bromobenzyloxy, 4-bromobenzyloxy, 4-bromophenoxy, 5-bromopyrid-2-yloxy,
- 5 4-butoxyphenoxy, chloro, 3-chlorobenzyl, 2-chlorophenoxy, 4-chlorophenoxy, 4-chloro-3-ethylphenoxy, 3-chloro-4-fluorobenzyl, 3-chloro-4-fluorophenyl, 3-chloro-2-fluorobenzyloxy, 3-chlorobenzyloxy, 4-chlorobenzyloxy, 4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy, 4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy,
- 10 3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy, 4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy, 2-cyanopyrid-3-yloxy, 4-cyanophenoxy, cyclobutoxy, cyclobutyl, cyclohexoxy, cyclohexylmethoxy, cyclopentoxy, cyclopentyl, cyclopentylcarbonyl, cyclopropyl, cyclopropylmethoxy, cyclopropoxy,
- 15 2,3-dichlorophenoxy, 2,4-dichlorophenoxy, 2,4-dichlorophenyl, 3,5-dichlorophenyl, 3,5-dichlorobenzyl, 3,4-dichlorophenoxy, 3,4-difluorophenoxy, 2,3-difluorobenzyloxy, 2,4-difluorobenzyloxy, 3,4-difluorobenzyloxy, 2,5-difluorobenzyloxy, 3,5-difluorophenoxy, 3,4-difluorophenyl, 3,5-difluorobenzyloxy, 4-difluoromethoxybenzyloxy,
- 20 2,3-difluorophenoxy, 2,4-difluorophenoxy, 2,5-difluorophenoxy, 3,5-dimethoxyphenoxy, 3-dimethylaminophenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3,4-dimethylbenzyl, 3,4-dimethylbenzyloxy, 3,5-dimethylbenzyloxy, 2,2-dimethylpropoxy, 1,3-dioxan-2-yl, 1,4-dioxan-2-yl, 1,3-dioxolan-2-yl, ethoxy, 4-ethoxyphenoxy,
- 25 4-ethylbenzyloxy, 3-ethylphenoxy, 4-ethylaminophenoxy, 3-ethyl-5-methylphenoxy, fluoro, 4-fluoro-3-methylbenzyl, 4-fluoro-3-methylphenyl, 4-fluoro-3-methylbenzoyl, 4-fluorobenzyloxy, 2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy, 3-fluorophenoxy, 3-fluoro-2-nitrophenoxy, 2-fluoro-3-trifluoromethylbenzyloxy,

- 3-fluoro-5-trifluoromethylbenzyloxy, 4-fluoro-2-trifluoromethylbenzyloxy,  
4-fluoro-3-trifluoromethylbenzyloxy, 2-fluorophenoxy, 4-fluorophenoxy,  
2-fluoro-3-trifluoromethylphenoxy, 2-fluorobenzyloxy,  
4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy,
- 5 4-fluoropyrid-2-yloxy, 2-furyl, 3-furyl, heptafluoropropyl,  
1,1,1,3,3,3-hexafluoropropyl, 2-hydroxy-3,3,3-trifluoropropoxy,  
3-iodobenzyloxy, isobutyl, isobutylamino, isobutoxy, 3-isoxazolyl,  
4-isoxazolyl, 5-isoxazolyl, isopropoxy, isopropyl, 4-isopropylbenzyloxy,  
3-isopropylphenoxy, 4-isopropylphenoxy, isopropylthio,
- 10 4-isopropyl-3-methylphenoxy, 3-isothiazolyl, 4-isothiazolyl,  
5-isothiazolyl, 3-methoxybenzyl, 4-methoxycarbonylbutoxy,  
3-methoxycarbonylprop-2-enyloxy, 4-methoxyphenyl,  
3-methoxyphenylamino, 4-methoxyphenylamino, 3-methylbenzyloxy,  
4-methylbenzyloxy, 3-methylphenoxy, 3-methyl-4-methylthiophenoxy,
- 15 4-methylphenoxy, 1-methylpropoxy, 2-methylpyrid-5-yloxy,  
4-methylthiophenoxy, 2-naphthyoxy, 2-nitrophenoxy, 4-nitrophenoxy,  
3-nitrophenyl, 4-nitrophenylthio, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl,  
pentafluoroethyl, pentafluoroethylthio, 2,2,3,3,3-pentafluoropropyl,  
1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl, phenoxy,
- 20 phenylamino, 1-phenylethoxy, phenylsulfonyl, 4-propanoylphenoxy,  
propoxy, 4-propylphenoxy, 4-propoxyphenoxy, thiophen-3-yl, *sec*-butyl,  
4-*sec*-butylphenoxy, *tert*-butoxy, 3-*tert*-butylphenoxy, 4-*tert*-butylphenoxy,  
1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl,  
2-(5,6,7,8-tetrahydronaphthyoxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl,
- 25 thiophen-2-yl, 2,3,5-trifluorobenzyloxy, 2,2,2-trifluoroethoxy,  
2,2,2-trifluoroethyl, 3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy,  
3-trifluoromethoxybenzyloxy, 4-trifluoromethoxybenzyloxy,  
3-trifluoromethoxyphenoxy, 4-trifluoromethoxyphenoxy, trifluoromethyl,  
3-trifluoromethylbenzyloxy, 4-trifluoromethylbenzyloxy,
- 30 2,4-bis-trifluoromethylbenzyloxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl,

3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzyloxy,

4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy,

3-trifluoromethylphenyl, 3-trifluoromethylthiobenzyloxy,

4-trifluoromethylthiobenzyloxy, 2,3,4-trifluorophenoxy,

5 2,3,4-trifluorophenyl, 2,3,5-trifluorophenoxy, 3,4,5-trimethylphenoxy,

3-difluoromethoxyphenoxy, 3-pentafluoroethylphenoxy,

3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 3-trifluoromethylthiophenoxy, and

trifluoromethylthio;

R<sub>6</sub> and R<sub>11</sub> are independently selected from the group consisting of  
10 chloro, fluoro, hydrido, pentafluoroethyl, 1,1,2,2-tetrafluoroethoxy,  
trifluoromethyl, and trifluoromethoxy;

R<sub>7</sub> and R<sub>12</sub> are independently selected from the group consisting of  
hydrido, fluoro, and trifluoromethyl.

15

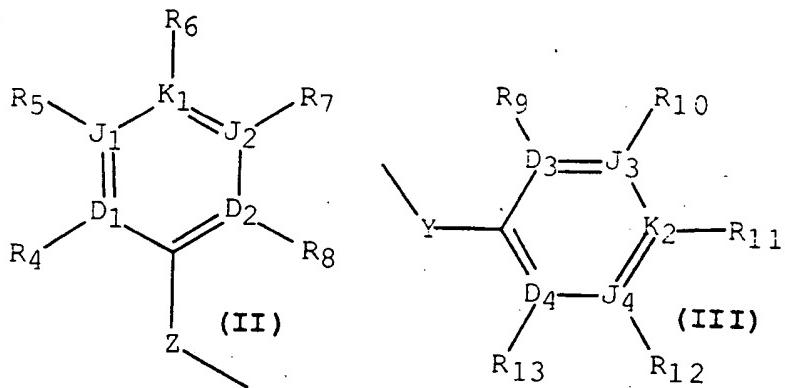
19. The compound as recited in Claim 18 or a pharmaceutically acceptable salt thereof, wherein;

n is the integer 1;

20 X is oxy;

R<sub>1</sub> is selected from the group consisting of trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-Prelog stereochemical system ranking than both R<sub>2</sub> and

25 (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q wherein A is Formula (II) and Q is Formula (III);



$R_{16}$  is hydrido;

$R_2$  is selected from the group consisting of hydrido, methyl, ethyl,

phenyl; 4-trifluoromethylphenyl, trifluoromethoxymethyl).

5 1,1,2,2-tetrafluoroethoxymethyl, difluoromethyl, and 2,2,3,3,3-

pentafluoropropyl with the proviso that R<sub>2</sub> has a lower Caben-Ingold-Prelog

system ranking than both  $R_1$  and  $(CHR_2)_-N(A)O$ :

$R_3$  is selected from the group consisting of hydrido, phenyl

4-trifluoromethylphenyl, methyl, trifluoromethyl, difluoromethyl, and

10 chlorodifluoromethyl with the provisos that  $(\text{CH}_2)_n-\text{N}(\text{Ar})\text{O}$  has a low

## Cahn-Ingold-Prelog stereochemical system ranking: the R, S, and M labels

## Cahn-Ingold-Prelog stereochemical system ranking the P

### **X in month 1**

Z is covalent size 1 - 1

15            $R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro:

$R_5$  and  $R_{10}$  are independently selected from the group consisting of  
benzyloxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy,  
3-bromobenzyloxy, 4-bromophenoxy, 4-butoxyphenoxy,  
3-chlorobenzyloxy, 2-chlorophenoxy, 4-chloro-3-ethylphenoxy,  
5 4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy,  
4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy,  
3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy,  
4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy,  
cyclobutoxy, cyclobutyl, cyclohexylmethoxy, cyclopentoxy, cyclopentyl,  
10 cyclopentylcarbonyl, cyclopropylmethoxy, 2,3-dichlorophenoxy,  
2,4-dichlorophenoxy, 2,4-dichlorophenyl, 3,5-dichlorophenyl,  
3,5-dichlorobenzyl, 3,4-dichlorophenoxy, 3,4-difluorophenoxy,  
2,3-difluorobenzyloxy, 3,5-difluorobenzyloxy, difluoromethoxy,  
3,5-difluorophenoxy, 3,4-difluorophenyl, 2,3-difluorophenoxy,  
15 2,4-difluorophenoxy, 2,5-difluorophenoxy, 3,5-dimethoxyphenoxy,  
3-dimethylaminophenoxy, 3,4-dimethylbenzyloxy, 3,5-dimethylbenzyloxy,  
3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 1,3-dioxolan-2-yl,  
3-ethylbenzyloxy, 3-ethylphenoxy, 4-ethylaminophenoxy,  
3-ethyl-5-methylphenoxy, 4-fluoro-3-methylbenzyl, 4-fluorobenzyloxy,  
20 2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy, 3-fluorophenoxy,  
3-fluoro-2-nitrophenoxy, 2-fluoro-3-trifluoromethylbenzyloxy,  
3-fluoro-5-trifluoromethylbenzyloxy, 2-fluorophenoxy, 4-fluorophenoxy,  
2-fluoro-3-trifluoromethylphenoxy, 2-fluorobenzyloxy,  
4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy, 2-furyl, 3-furyl,  
25 heptafluoropropyl, 1,1,1,3,3,3-hexafluoropropyl,  
2-hydroxy-3,3,3-trifluoropropoxy, isobutoxy, isobutyl, 3-isoxazolyl,  
4-isoxazolyl, 5-isoxazolyl, isopropoxy, 3-isopropylbenzyloxy,  
3-isopropylphenoxy, isopropylthio, 4-isopropyl-3-methylphenoxy,  
3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl, 3-methoxybenzyl,

- 4-methoxyphenylamino, 3-methylbenzyloxy, 4-methylbenzyloxy,  
3-methylphenoxy, 3-methyl-4-methylthiophenoxy, 4-methylphenoxy,  
1-methylpropoxy, 2-methylpyrid-5-yloxy, 4-methylthiophenoxy,  
2-naphthyloxy, 2-nitrophenoxy, 4-nitrophenoxy, 3-nitrophenyl, 2-oxazolyl,  
5 4-oxazolyl, 5-oxazolyl, pentafluoroethyl, pentafluoroethylthio, 2,2,3,3,3-  
pentafluoropropyl, 1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl,  
phenoxy, phenylamino, 1-phenylethoxy, 4-propylphenoxy,  
4-propoxyphenoxy, thiophen-3-yl, tert -butoxy, 3-tert -butylphenoxy,  
4-tert -butylphenoxy, 1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl.  
10 2-(5,6,7,8-tetrahydronaphthyloxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl,  
thiophen-2-yl, 2,2,2-trifluoroethoxy, 2,2,2-trifluoroethyl,  
3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy,  
3-trifluoromethoxybenzyloxy, 4-trifluoromethoxybenzyloxy,  
4-trifluoromethoxyphenoxy, 3-trifluoromethoxyphenoxy, trifluoromethyl,  
15 3-trifluoromethylbenzyloxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl,  
3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzyloxy,  
4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy,  
3-trifluoromethylphenyl, 2,3,4-trifluorophenoxy, 2,3,5-trifluorophenoxy,  
3,4,5-trimethylphenoxy, 3-difluoromethoxyphenoxy,  
20 3-pentafluoroethylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy,  
3-trifluoromethylthiophenoxy, 3-trifluoromethylthiobenzyloxy, and  
trifluoromethylthio;  
25  $R_6$  and  $R_{11}$  are independently selected from the group consisting of  
chloro, fluoro, hydrido, pentafluoroethyl, 1,1,2,2-tetrafluoroethoxy, and  
trifluoromethyl;

$R_7$  and  $R_{12}$  are independently selected from the group consisting of  
hydrido, fluoro, and trifluoromethyl.

20. The compound as recited in Claim 17 or a pharmaceutically acceptable salt, wherein:

D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are each carbon:

D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group

5 consisting of C, N, O, S and covalent bond with the provisos that no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is a covalent bond, no more than one of D<sub>3</sub>,

D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is O, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is S. one of

D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> must be a covalent bond when two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and

K<sub>2</sub> are O and S, no more than four of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are N, and one of

10 D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is selected from the group consisting of O, S, and N:

n is the integer 1;

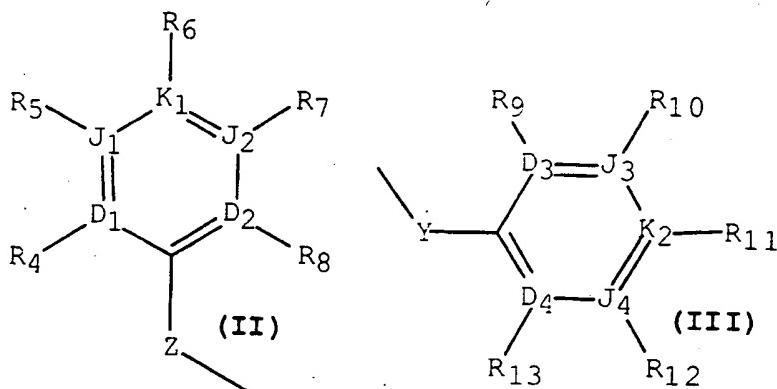
X is oxy;

R<sub>16</sub> is hydrido;

15 R<sub>1</sub> is haloalkyl with the proviso that R<sub>1</sub> has a higher Cahn-Ingold-

Prelog stereochemical system ranking than both R<sub>2</sub> and (CHR<sub>3</sub>)<sub>n</sub>-N(A)Q

wherein A is Formula (II) and Q is Formula (III);



$R_2$  is selected from the group consisting of hydrido, alkyl, aryl,

haloalkyl, and haloalkoxy with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-

Prelog system ranking than both  $R_1$  and  $(CHR_3)_n-N(A)Q$ :

5  $R_3$  is selected from the group consisting of hydrido, alkyl, and

haloalkyl with the provisos that  $(CHR_3)_n-N(A)Q$  has a lower Cahn-Ingold-

Prelog stereochemical system ranking than R, and a higher Cahn-Ingold-

### Prelog stereochemical system ranking than R<sub>o</sub>:

Y is a C1-C2 alkylene:

10 Z is covalent single bond:

$R_{14}$  is hydrido:

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and halo:

$R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy,

cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, and heteroaryloxyalkyl.

- 5 21. The compound as recited in Claim 17 or a pharmaceutically acceptable salt, wherein:

$D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  are each carbon;

$D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  is a covalent bond, no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  is O, no more than one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  is S, one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  must be a covalent bond when two of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  are O and S, no more than four of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  are N, and one of  $D_1$ ,  $D_2$ ,  $J_1$ ,  $J_2$  and  $K_1$  is selected from the group consisting of O, S, and N;

15

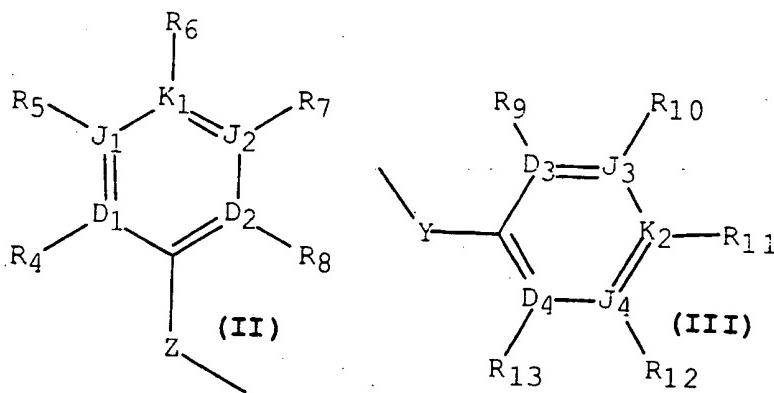
$n$  is the integer 1;

X is oxy;

$R_{16}$  is hydrido;

$R_1$  is haloalkyl with the proviso that  $R_1$  has a higher Cahn-Ingold-

- 20 Prelog stereochemical system ranking than both  $R_2$  and  $(CHR_3)_n-N(A)Q$  wherein A is Formula (II) and Q is Formula (III);



$R_2$  is selected from the group consisting of hydrido, alkyl, aryl,

haloalkyl, and haloalkoxy with the proviso that R<sub>2</sub> has a lower Cahn-Ingold-

Prelog system ranking than both  $R_1$  and  $(CHR_3)_n \cdot N(A)Q;$

5           R<sub>3</sub> is selected from the group consisting of hydrido, alkyl, and

haloalkyl with the provisos that  $(\text{CH}_3)_n\text{-N}(\text{A})\text{Q}$  has a lower Cahn-Ingold-

Prelog stereochemical system ranking than R, and a higher Cahn-Ingold-

Prelog stereochemical system ranking than R<sub>o</sub>:

Y is a C1-C2 alkylene:

<sup>10</sup> Z is covalent single bond:

$R_{14}$  is hydrido:

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and halo:

$R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy.

cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, and heteroaryloxyalkyl.

22. The compound as recited in any one of Claims 20 or 21 or a

5 pharmaceutically acceptable salt thereof, wherein:

n is the integer 1;

X is oxy;

R<sub>1</sub> is selected from the group consisting of trifluoromethyl and

10 pentafluoroethyl;

R<sub>16</sub> is hydrido;

R<sub>2</sub> is hydrido;

R<sub>3</sub> is selected from the group consisting of hydrido,

methyl, trifluoromethyl, and difluoromethyl;

15 Y is methylene;

Z is a covalent single bond;

R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group consisting of hydrido and fluoro;

R<sub>5</sub> is selected from the group consisting of 5-bromo-2-fluorophenoxy,

20 4-chloro-3-ethylphenoxy, 2,3-dichlorophenoxy, 3,4-dichlorophenoxy, 3-difluoromethoxyphenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3-ethylphenoxy, 3-ethyl-5-methylphenoxy, 4-fluoro-3-methylphenoxy, 4-fluorophenoxy, 3-isopropylphenoxy, 3-methylphenoxy, 3-pentafluoroethylphenoxy, 3-tert -butylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 2-(5,6,7,8-tetrahydronaphthyloxy), 25 3-trifluoromethoxybenzyloxy, 3-trifluoromethoxyphenoxy,

3-trifluoromethylbenzyloxy, and 3-trifluoromethylthiophenoxy;

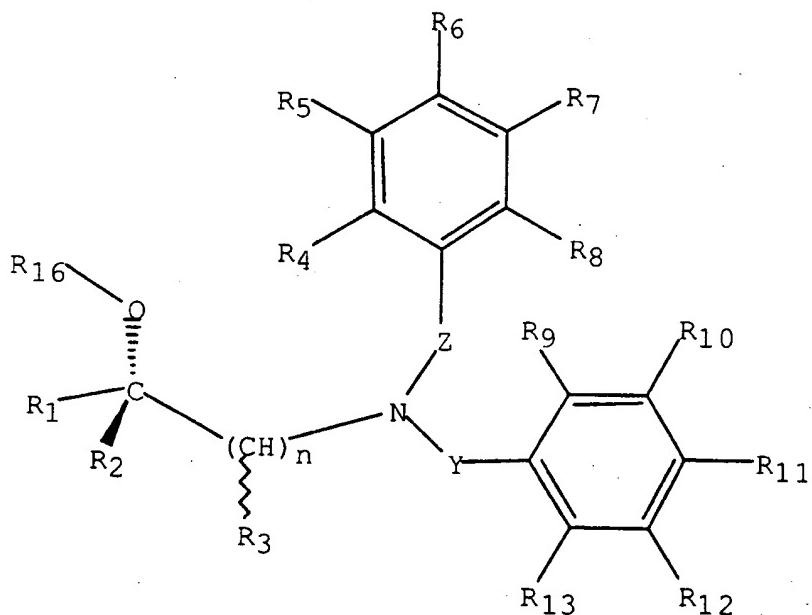
R<sub>10</sub> is selected from the group consisting of cyclopentyl, 1,1,2,2-tetrafluoroethoxy, 2-furyl, 1,1-bis-trifluoromethyl-1-hydroxymethyl, isobutyl, isopropoxy, pentafluoroethyl, trifluoromethoxy, trifluoromethyl, and 5 trifluoromethylthio;

R<sub>6</sub> and R<sub>11</sub> are independently selected from the group consisting of fluoro and hydrido;

R<sub>7</sub> and R<sub>12</sub> are independently selected from the group consisting of hydrido and fluoro.

10

23. A compound having the formula:



or a pharmaceutically acceptable salt thereof, wherein:

15

n is an integer selected from 1 and 2;

R<sub>1</sub> is selected from the group consisting of haloalkyl and  
haloalkoxyalkyl;

R<sub>16</sub> is hydrido;

R<sub>2</sub> is hydrido;

5 R<sub>3</sub> is hydrido;

Y is selected from the group consisting of a covalent single bond and  
C1-C2 alkylene;

Z is selected from the group consisting of a covalent single bond and  
C1-C2 alkylene;

10

R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group  
consisting of hydrido and halo;

15 R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>10</sub>, R<sub>11</sub>, and R<sub>12</sub> are independently selected from the  
group consisting of perhaloaryloxy, N-aryl-N-alkylamino,  
heterocyclalkoxy, heterocyclthio, hydroxyalkoxy, carboxamidoalkoxy,  
alkoxycarbonylalkoxy, alkoxy carbonylalkenyloxy, aralkanoylalkoxy,  
aralkenoyl, N-arylcarboxamidoalkoxy, cycloalkylcarbonyl, cyanoalkoxy,  
heterocyclcarbonyl, hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl,  
20 alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy,  
heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy,  
cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl,  
heteroaralkoxy, heterocycloxy, aralkylaryl, heteroaryloxyalkyl,  
heteroarylthio, and heteroarylsulfonyl.

25

24. The compound as recited in Claim 23 or a pharmaceutically acceptable salt thereof wherein:

5 n is the integer 1;

$R_{16}$  is hydrido;

$R_1$  is selected from the group consisting of trifluoromethyl, 1,1,2,2-tetrafluoroethoxymethyl, trifluoromethoxymethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl;

10  $R_2$  is hydrido;

$R_3$  is hydrido;

Y is selected from the group consisting of methylene, and ethylene;

Z is selected from the group consisting of covalent single bond and methylene;

15  $R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido and fluoro;

$R_5$  and  $R_{10}$  are independently selected from the group consisting of 4-aminophenoxy, benzoyl, benzyl, benzyloxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy, 4-bromo-2-nitrophenoxy, 3-bromobenzyloxy, 20 4-bromobenzyloxy, 4-bromophenoxy, 5-bromopyrid-2-yloxy, 4-butoxyphenoxy, chloro, 3-chlorobenzyl, 2-chlorophenoxy, 4-chlorophenoxy, 4-chloro-3-ethylphenoxy, 3-chloro-4-fluorobenzyl, 3-chloro-4-fluorophenyl, 3-chloro-2-fluorobenzyloxy, 3-chlorobenzyloxy, 4-chlorobenzyloxy, 4-chloro-3-methylphenoxy, 2-chloro-4-fluorophenoxy, 25 4-chloro-2-fluorophenoxy, 4-chlorophenoxy, 3-chloro-4-ethylphenoxy, 3-chloro-4-methylphenoxy, 3-chloro-4-fluorophenoxy,

- 4-chloro-3-fluorophenoxy, 4-chlorophenylamino, 5-chloropyrid-3-yloxy,  
2-cyanopyrid-3-yloxy, 4-cyanophenoxy, cyclobutoxy, cyclobutyl,  
cyclohexoxy, cyclohexylmethoxy, cyclopentoxy, cyclopentyl,  
cyclopentylcarbonyl, cyclopropyl, cyclopropylmethoxy, cyclopropoxy.
- 5    2,3-dichlorophenoxy, 2,4-dichlorophenoxy, 2,4-dichlorophenyl,  
3,5-dichlorophenyl, 3,5-dichlorobenzyl, 3,4-dichlorophenoxy,  
3,4-difluorophenoxy, 2,3-difluorobenzylxy, 2,4-difluorobenzylxy,  
3,4-difluorobenzylxy, 2,5-difluorobenzylxy, 3,5-difluorophenoxy,  
3,4-difluorophenyl, 3,5-difluorobenzylxy, 4-difluoromethoxybenzylxy,
- 10   2,3-difluorophenoxy, 2,4-difluorophenoxy, 2,5-difluorophenoxy,  
3,5-dimethoxyphenoxy, 3-dimethylaminophenoxy, 3,5-dimethylphenoxy,  
3,4-dimethylphenoxy, 3,4-dimethylbenzyl, 3,4-dimethylbenzylxy,  
3,5-dimethylbenzylxy, 2,2-dimethylpropoxy, 1,3-dioxan-2-yl,  
1,4-dioxan-2-yl, 1,3-dioxolan-2-yl, ethoxy, 4-ethoxyphenoxy,
- 15   4-ethylbenzylxy, 3-ethylphenoxy, 4-ethylaminophenoxy,  
3-ethyl-5-methylphenoxy, fluoro, 4-fluoro-3-methylbenzyl,  
4-fluoro-3-methylphenyl, 4-fluoro-3-methylbenzoyl, 4-fluorobenzylxy,  
2-fluoro-3-methylphenoxy, 3-fluoro-4-methylphenoxy,  
3-fluorophenoxy, 3-fluoro-2-nitrophenoxy,
- 20   2-fluoro-3-trifluoromethylbenzylxy, 3-fluoro-5-trifluoromethylbenzylxy,  
4-fluoro-2-trifluoromethylbenzylxy, 4-fluoro-3-trifluoromethylbenzylxy,  
2-fluorophenoxy, 4-fluorophenoxy, 2-fluoro-3-trifluoromethylphenoxy,  
2-fluorobenzylxy, 4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy,  
4-fluoropyrid-2-yloxy, 2-furyl, 3-furyl, heptafluoropropyl, 1,1,1,3,3,3-
- 25   hexafluoropropyl, 2-hydroxy-3,3,3-trifluoropropoxy, 3-iodobenzylxy,  
isobutyl, isobutylamino, isobutoxy, 3-isoxazolyl, 4-isoxazolyl, 5-isoxazolyl,  
isopropoxy, isopropyl, 4-isopropylbenzylxy, 3-isopropylphenoxy,  
4-isopropylphenoxy, isopropylthio, 4-isopropyl-3-methylphenoxy,  
3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl, 3-methoxybenzyl,
- 30   4-methoxycarbonylbutoxy, 3-methoxycarbonylprop-2-enyloxy,

- 4-methoxyphenyl, 3-methoxyphenylamino, 4-methoxyphenylamino,  
3-methylbenzyloxy, 4-methylbenzyloxy, 3-methylphenoxy,  
3-methyl-4-methylthiophenoxy, 4-methylphenoxy, 1-methylpropoxy,  
2-methylpyrid-5-yloxy, 4-methylthiophenoxy, 2-naphthyloxy,
- 5 2-nitrophenoxy, 4-nitrophenoxy, 3-nitrophenyl, 4-nitrophenylthio, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl, pentafluoroethyl, pentafluoroethylthio, 2,2,3,3,3-pentafluoropropyl, 1,1,3,3,3-pentafluoropropyl, 1,1,2,2,3-pentafluoropropyl, phenoxy, phenylamino, 1-phenylethoxy, phenylsulfonyl, 4-propanoylphenoxy, propoxy, 4-propylphenoxy,
- 10 4-propoxyphenoxy, thiophen-3-yl, *sec*-butyl, 4-*sec*-butylphenoxy, *tert*-butoxy, 3-*tert*-butylphenoxy, 4-*tert*-butylphenoxy, 1,1,2,2-tetrafluoroethoxy, tetrahydrofuran-2-yl, 2-(5,6,7,8-tetrahydronaphthyloxy), thiazol-2-yl, thiazol-4-yl, thiazol-5-yl, thiophen-2-yl, 2,3,5-trifluorobenzyl, 2,2,2-trifluoroethoxy.
- 15 2,2,2-trifluoroethyl, 3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy, 3-trifluoromethoxybenzyl, 4-trifluoromethoxybenzyl, 3-trifluoromethoxyphenoxy, 4-trifluoromethoxyphenoxy, trifluoromethyl, 3-trifluoromethylbenzyl, 4-trifluoromethylbenzyl, 2,4-bis-trifluoromethylbenzyl, 1,1-bis-trifluoromethyl-1-hydroxymethyl,
- 20 3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzyl, 4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy, 3-trifluoromethylphenyl, 3-trifluoromethylthiobenzyl, 4-trifluoromethylthiobenzyl, 2,3,4-trifluorophenoxy, 2,3,4-trifluorophenyl, 2,3,5-trifluorophenoxy, 3,4,5-trimethylphenoxy,
- 25 3-difluoromethoxyphenoxy, 3-pentafluoroethylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 3-trifluoromethylthiophenoxy, and trifluoromethylthio;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of chloro, fluoro, hydrido, pentafluoroethyl, 1,1,2,2-tetrafluoroethoxy, trifluoromethyl, and trifluoromethoxy;

$R_7$  and  $R_{12}$  are independently selected from the group consisting of  
5 hydrido, fluoro, and trifluoromethyl.

25. The compound as recited in Claim 24 or a pharmaceutically acceptable salt thereof, wherein;

10

$n$  is the integer 1;

$R_1$  is selected from the group consisting of trifluoromethyl, difluoromethyl, chlorodifluoromethyl, and pentafluoroethyl;

$R_{16}$  is hydrido;

15  $R_2$  is hydrido;

$R_3$  is hydrido;

$Y$  is methylene;

$Z$  is covalent single bond;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group  
20 consisting of hydrido and fluoro;

$R_5$  and  $R_{10}$  are independently selected from the group consisting of benzylxy, 5-bromo-2-fluorophenoxy, 4-bromo-3-fluorophenoxy, 3-bromobenzylxy, 4-bromophenoxy, 4-butoxyphenoxy, 3-chlorobenzylxy, 2-chlorophenoxy, 4-chloro-3-ethylphenoxy, 4-chloro-3-methylphenoxy,  
25 2-chloro-4-fluorophenoxy, 4-chloro-2-fluorophenoxy, 4-chlorophenoxy,

- 3-chloro-4-ethylphenoxy, 3-chloro-4-methylphenoxy,  
3-chloro-4-fluorophenoxy, 4-chloro-3-fluorophenoxy,  
4-chlorophenylamino, 5-chloropyrid-3-yloxy, cyclobutoxy, cyclobutyl,  
cyclohexylmethoxy, cyclopentoxy, cyclopentyl, cyclopentylcarbonyl,  
5 cyclopropylmethoxy, 2,3-dichlorophenoxy, 2,4-dichlorophenoxy,  
2,4-dichlorophenyl, 3,5-dichlorophenyl, 3,5-dichlorobenzyl,  
3,4-dichlorophenoxy, 3,4-difluorophenoxy, 2,3-difluorobenzylloxy,  
3,5-difluorobenzylloxy, difluoromethoxy, 3,5-difluorophenoxy,  
3,4-difluorophenyl, 2,3-difluorophenoxy, 2,4-difluorophenoxy,  
10 2,5-difluorophenoxy, 3,5-dimethoxyphenoxy, 3-dimethylaminophenoxy,  
3,4-dimethylbenzyloxy, 3,5-dimethylbenzyloxy, 3,5-dimethylphenoxy,  
3,4-dimethylphenoxy, 1,3-dioxolan-2-yl, 3-ethylbenzyloxy,  
3-ethylphenoxy, 4-ethylaminophenoxy, 3-ethyl-5-methylphenoxy,  
4-fluoro-3-methylbenzyl, 4-fluorobenzylloxy, 2-fluoro-3-methylphenoxy,  
15 3-fluoro-4-methylphenoxy, 3-fluorophenoxy, 3-fluoro-2-nitrophenoxy,  
2-fluoro-3-trifluoromethylbenzyloxy, 3-fluoro-5-trifluoromethylbenzyloxy,  
2-fluorophenoxy, 4-fluorophenoxy, 2-fluoro-3-trifluoromethylphenoxy,  
2-fluorobenzylloxy, 4-fluorophenylamino, 2-fluoro-4-trifluoromethylphenoxy,  
2-furyl, 3-furyl, heptafluoropropyl, 1,1,1,3,3-hexafluoropropyl,  
20 2-hydroxy-3,3,3-trifluoropropoxy, isobutoxy, isobutyl, 3-isoxazolyl,  
4-isoxazolyl, 5-isoxazolyl, isopropoxy, 3-isopropylbenzyloxy,  
3-isopropylphenoxy, isopropylthio, 4-isopropyl-3-methylphenoxy,  
3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl, 3-methoxybenzyl,  
4-methoxyphenylamino, 3-methylbenzyloxy, 4-methylbenzyloxy,  
25 3-methylphenoxy, 3-methyl-4-methylthiophenoxy, 4-methylphenoxy,  
1-methylpropoxy, 2-methylpyrid-5-yloxy, 4-methylthiophenoxy,  
2-naphthylloxy, 2-nitrophenoxy, 4-nitrophenoxy, 3-nitrophenyl, 2-oxazolyl,  
4-oxazolyl, 5-oxazolyl, pentafluoroethyl, pentafluoroethylthio,  
2,2,3,3-pentafluoropropyl, 1,1,3,3-pentafluoropropyl,  
30 1,1,2,2,3-pentafluoropropyl, phenoxy, phenylamino, 1-phenylethoxy,

- 4-propylphenoxy, 4-propoxyphenoxy, thiophen-3-yl, tert -butoxy,  
3-tert -butylphenoxy, 4-tert -butylphenoxy, 1,1,2,2-tetrafluoroethoxy,  
tetrahydrofuran-2-yl, 2-(5,6,7,8-tetrahydronaphthyloxy), thiazol-2-yl,  
thiazol-4-yl, thiazol-5-yl, thiophen-2-yl, 2,2,2-trifluoroethoxy.
- 5 2,2,2-trifluoroethyl, 3,3,3-trifluoro-2-hydroxypropyl, trifluoromethoxy,  
3-trifluoromethoxybenzyloxy, 4-trifluoromethoxybenzyloxy,  
4-trifluoromethoxyphenoxy, 3-trifluoromethoxyphenoxy, trifluoromethyl,  
3-trifluoromethylbenzyloxy, 1,1-bis-trifluoromethyl-1-hydroxymethyl,  
3-trifluoromethylbenzyl, 3,5-bis-trifluoromethylbenzyloxy.
- 10 4-trifluoromethylphenoxy, 3-trifluoromethylphenoxy,  
3-trifluoromethylphenyl, 2,3,4-trifluorophenoxy, 2,3,5-trifluorophenoxy,  
3,4,5-trimethylphenoxy, 3-difluoromethoxyphenoxy,  
3-pentafluoroethylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy,  
3-trifluoromethylthiophenoxy, 3-trifluoromethylthiobenzyloxy, and
- 15 trifluoromethylthio;

$R_6$  and  $R_{11}$  are independently selected from the group consisting of  
chloro, fluoro, hydrido, pentafluoroethyl, 1,1,2,2-tetrafluoroethoxy, and  
trifluoromethyl:

- $R_7$  and  $R_{12}$  are independently selected from the group consisting of  
20 hydrido, fluoro, and trifluoromethyl.

26. The compound as recited in Claim 23 or a pharmaceutically acceptable  
salt, wherein;

25  $n$  is the integer 1;

$R_{16}$  is hydrido;

$R_1$  is haloalkyl;

R<sub>2</sub> is is hydrido;

R<sub>3</sub> is is hydrido;

Y is methylene;

Z is a covalent single bond;

5 R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group consisting of hydrido and halo;

R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>10</sub>, R<sub>11</sub>, and R<sub>12</sub> are independently selected from the group consisting of perhaloaryloxy, N-aryl-N-alkylamino, heterocyclalkoxy, heterocyclthio, hydroxyalkoxy, aralkanoylalkoxy, 10 aralkenoyl, cycloalkylcarbonyl, cyanoalkoxy, heterocyclcarbonyl, hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy, cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, and heteroaryloxyalkyl.

15

27. The compound as recited in Claim 26 or a pharmaceutically acceptable salt, wherein;

n is the integer 1;

20 R<sub>16</sub> is hydrido;

R<sub>1</sub> is haloalkyl;

R<sub>2</sub> is is hydrido;

R<sub>3</sub> is is hydrido;

Y is methylene;

Z is a covalent single bond:

R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group consisting of hydrido and halo;

R<sub>5</sub> is selected from the group consisting of perhaloaryloxy.

- 5 N-aryl-N-alkylamino, heterocyclalkoxy, heterocyclthio, hydroxylalkoxy, aralkanoylalkoxy, aralkenoyl, cycloalkylcarbonyl, cyanoalkoxy, heterocyclcarbonyl, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy, cycloalkylalkanoyl, heteroaryl, 10 cycloalkyl, haloalkylthio, hydroxyhaloalkyl, heteroaralkoxy, and heteroaryloxyalkyl.

R<sub>10</sub> is selected from the group consisting of haloalkyl, haloalkoxy, aryl, alkylthio, alkoxy, aralkyl, alkyl, cycloalkoxy, cycloalkylalkoxy, heteroaryl, cycloalkyl, haloalkylthio, and hydroxyhaloalkyl.

- 15 R<sub>6</sub> and R<sub>11</sub> are independently selected from the group consisting of hydrido and halo;

R<sub>7</sub> and R<sub>12</sub> are independently selected from the group consisting of hydrido and halo.

- 20 28. The compound as recited in Claim 27 or a pharmaceutically acceptable salt thereof, wherein;

n is the integer 1;

R<sub>1</sub> is trifluoromethyl;

- 25 R<sub>16</sub> is hydrido;

R<sub>2</sub> is hydrido;

R<sub>3</sub> is hydrido;

Y is methylene;

Z is a covalent single bond;

- 5 R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group consisting of hydrido and fluoro;

- R<sub>5</sub> is selected from the group consisting of 5-bromo-2-fluorophenoxy, 4-chloro-3-ethylphenoxy, 2,3-dichlorophenoxy, 3,4-dichlorophenoxy, 3-difluoromethoxyphenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 10 3-ethylphenoxy, 3-ethyl-5-methylphenoxy, 4-fluoro-3-methylphenoxy, 4-fluorophenoxy, 3-isopropylphenoxy, 3-methylphenoxy, 3-pentafluoroethylphenoxy, 3-tert-butylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 2-(5,6,7,8-tetrahydronaphthylloxy), 3-trifluoromethoxybenzyloxy, 3-trifluoromethoxyphenoxy, 15 3-trifluoromethylbenzyloxy, and 3-trifluoromethylthiophenoxy;

R<sub>10</sub> is selected from the group consisting of cyclopentyl, 1,1,2,2-tetrafluoroethoxy, 2-furyl, 1,1-bis-trifluoromethyl-1-hydroxymethyl, pentafluoroethyl, trifluoromethoxy, trifluoromethyl, and trifluoromethylthio;

- R<sub>6</sub> and R<sub>11</sub> are independently selected from the group consisting of 20 fluoro and hydrido;

R<sub>7</sub> and R<sub>12</sub> are independently selected from the group consisting of hydrido and fluoro.

29. The compound as recited in Claim 28 or a pharmaceutically 25 acceptable salt thereof, wherein:

n is the integer 1;

R<sub>1</sub> is trifluoromethyl;

R<sub>16</sub> is hydrido;

R<sub>2</sub> is hydrido;

5 R<sub>3</sub> is hydrido;

Y is methylene;

Z is a covalent single bond;

R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group consisting of hydrido and fluoro;

10 R<sub>5</sub> is selected from the group consisting of 5-bromo-2-fluorophenoxy, 4-chloro-3-ethylphenoxy, 2,3-dichlorophenoxy, 3,4-dichlorophenoxy, 3-difluoromethoxyphenoxy, 3,5-dimethylphenoxy, 3,4-dimethylphenoxy, 3-ethylphenoxy, 3-ethyl-5-methylphenoxy, 4-fluoro-3-methylphenoxy, 4-fluorophenoxy, 3-isopropylphenoxy, 3-methylphenoxy, 15 3-pentafluoroethylphenoxy, 3-tert-butylphenoxy, 3-(1,1,2,2-tetrafluoroethoxy)phenoxy, 2-(5,6,7,8-tetrahydronaphthoxy), 3-trifluoromethoxybenzyloxy, 3-trifluoromethoxyphenoxy, 3-trifluoromethylbenzyloxy, and 3-trifluoromethylthiophenoxy;

R<sub>10</sub> is selected from the group consisting of 1,1,2,2-tetrafluoroethoxy, 20 pentafluoroethyl, and trifluoromethyl;

R<sub>6</sub> and R<sub>11</sub> are independently selected from the group consisting of fluoro and hydrido;

R<sub>7</sub> and R<sub>12</sub> are independently selected from the group consisting of hydrido and fluoro.

30. A compound as recited in Claim 23 or a pharmaceutically acceptable salt thereof wherein said compound is selected from the group consisting of:

- 5           (2R)-3-[{[3-(3-trifluoromethoxyphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-(3-isopropylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-(3-cyclopropylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 10          (2R)-3-[{[3-(3-(2-furyl)phenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-(2,3-dichlorophenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-(4-fluorophenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 15          (2R)-3-[{[3-(4-methylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-(2-fluoro-5-bromophenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-(4-chloro-3-ethylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 20          (2R)-3-[{[3-[3-(1,1,2,2-tetrafluoroethoxy)phenoxy]phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-[3-(1,1,2,2-tetrafluoroethoxy)phenoxy]phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 25          (2R)-3-[{[3-[3-(pentafluoroethyl)phenoxy]phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-(3,5-dimethylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[{[3-(3-ethylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 30          (2R)-3-[{[3-(3-ethylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;

- (2R)-3-[3-(3-*t*-butylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[3-(3-methylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[3-(5,6,7,8-tetrahydro-2-naphthoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[3-(phenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[3-[3-(*N,N*-dimethylamino)phenoxy]phenyl][[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[3-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl][3-[3-(trifluoromethoxy)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[3-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl][3-[3-(trifluoromethyl)phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[3-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl][3-[3-(3,5-dimethylphenyl)-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[3-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl][3-[3-(trifluoromethylthio)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[3-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl][3-[3,5-difluorophenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 20 (2R)-3-[3-[3-(1,1,2,2-tetrafluoroethoxy)phenyl]methyl][3-[cyclohexylmethoxy]-phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 3-[3-(2-difluoromethoxy-4-pyridyloxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 25 (2R)-3-[3-(2-trifluoromethyl-4-pyridyloxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[3-(3-difluoromethoxyphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[3-(3-trifluoromethylthio)phenoxy]phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 30 (2R)-3-[3-(3-trifluoromethylthio)phenoxy]phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;

- (2R)-3-[[3-(4-chloro-3-trifluoromethylphenoxy)phenyl][[3-(1,1,2,2-tetrafluoroethoxy)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-trifluoromethoxyphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[[3-(3-isopropylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-cyclopropylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-(2-furyl)phenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[[3-(2,3-dichlorophenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-fluorophenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-methylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[[3-(2-fluoro-5-bromophenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-chloro-3-ethylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- 20 (2R)-3-[[3-[3-(1,1,2,2-tetrafluoroethoxy)phenoxy]phenyl][[3-(pentafluoroethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-[3-(pentafluoroethyl)phenoxy]phenyl][[3-(pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 25 (2R)-3-[[3-(3,5-dimethylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-ethylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-*t*-butylphenoxy)phenyl][[3-
- 30 (pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;

- (2R)-3-[[3-(3-methylphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(5,6,7,8-tetrahydro-2-naphthoxy)phenyl][[3-(pentafluoroethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[[3-(phenoxy)phenyl][[3-(pentafluoroethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-[3-(N,N-dimethylamino)phenoxy]phenyl][[3-(pentafluoroethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(pentafluoroethyl)phenyl]methyl][3-[3-(trifluoromethoxy)phenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[[[3-(pentafluoroethyl)phenyl]methyl][3-[3-(trifluoromethyl)phenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(pentafluoroethyl)phenyl]methyl][3-[3,5-dimethylphenyl]methoxy]-phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[[[3-(pentafluoroethyl)phenyl]methyl][3-[3-(trifluoromethylthio)phenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(pentafluoroethyl)phenyl]methyl][3-[3,5-difluorophenyl]methoxy]-phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(pentafluoroethyl)phenyl]methyl][3-[cyclohexylmethoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 20 (2R)-3-[[3-(2-difluoromethoxy-4-pyridyloxy)phenyl][[3-(pentafluoroethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-trifluoromethyl-4-pyridyloxy)phenyl][[3-(pentafluoroethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 25 (2R)-3-[[3-(3-difluoromethoxyphenoxy)phenyl][[3-(pentafluoroethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(3-trifluoromethylthio)phenoxy]phenyl][[3-(pentafluoroethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-chloro-3-trifluoromethylphenoxy)phenyl][[3-(pentafluoroethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 30

- (2R)-3-[[3-(3-trifluoromethoxyphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-isopropylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[[3-(3-cyclopropylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-(2-furyl)phenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2,3-dichlorophenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[[3-(4-fluorophenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-methylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-fluoro-5-bromophenoxy)phenyl][[3-(heptafluoropropyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[[3-(4-chloro-3-ethylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-[3-(1,1,2,2-tetrafluoroethoxy)phenoxy]phenyl][[3-(heptafluoropropyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 20 (2R)-3-[[3-[3-(pentafluoroethyl)phenoxy]phenyl][[3-(heptafluoropropyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3,5-dimethylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- 25 (2R)-3-[[3-(3-ethylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-t-butylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-methylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 30 (2R)-3-[[3-(3-ethylphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;

- (2R)-3-[[3-(5,6,7,8-tetrahydro-2-naphthoxy)phenyl][[3-(heptafluoropropyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(phenoxy)phenyl][[3-(heptafluoropropyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[[3-[3-(N,N-dimethylamino)phenoxy]phenyl][[3-(heptafluoropropyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(heptafluoropropyl)phenyl]methyl][3-[3-(trifluoromethoxy)phenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(heptafluoropropyl)phenyl]methyl][3-[3-(trifluoromethyl)phenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[[[3-(heptafluoropropyl)phenyl]methyl][3-[3-(trifluoromethylthio)phenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(heptafluoropropyl)phenyl]methyl][3-[3.5-dimethylphenyl]methoxy]-phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(heptafluoropropyl)phenyl]methyl][3-[3-(trifluoromethylthio)phenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[[[3-(heptafluoropropyl)phenyl]methyl][3-[3.5-difluorophenyl]methoxy]-phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(heptafluoropropyl)phenyl]methyl][3-[cyclohexylmethoxy]phenyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-difluoromethoxy-4-pyridyloxy)phenyl][[3-
- 20 (heptafluoropropyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-trifluoromethyl-4-pyridyloxy)phenyl][[3-(heptafluoropropyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-difluoromethoxyphenoxy)phenyl][[3-(heptafluoropropyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 25 (2R)-3-[[[3-(3-trifluoromethylthio)phenoxy]phenyl][[3-(heptafluoropropyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-chloro-3-trifluoromethylphenoxy)phenyl][[3-(heptafluoropropyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-trifluoromethoxyphenoxy)phenyl][[2-fluoro-5-
- 30 (trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;

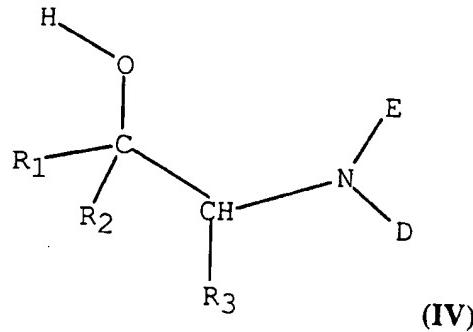
- (2R)-3-[[3-(3-isopropylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-cyclopropylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[[3-(3-(2-furyl)phenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2,3-dichlorophenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-fluorophenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[[3-(4-methylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-methylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-fluoro-5-bromophenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[[3-(4-chloro-3-ethylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-[3-(1,1,2,2-tetrafluoroethoxy)phenoxy]phenyl][[2-fluoro-5-(trifluoro-methyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-[3-(pentafluoroethyl)phenoxy]phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 20 (2R)-3-[[3-(3,5-dimethylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-ethylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-t-butylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- 25 (2R)-3-[[3-(3-methylphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(5,6,7,8-tetrahydro-2-naphthoxy)phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 30 (2R)-3-[[3-(5,6,7,8-tetrahydro-2-naphthoxy)phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;

- (2R)-3-[[3-(phenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-[3-(N,N-dimethylamino)phenoxy]phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[[[2-fluoro-5-(trifluoromethyl)phenyl]methyl][3-[3-(trifluoromethoxy)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[2-fluoro-5-(trifluoromethyl)phenyl]methyl][3-[3-(trifluoromethyl)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[2-fluoro-5-(trifluoromethyl)phenyl]methyl][3-[3.5-dimethylphenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[[[2-fluoro-5-(trifluoromethyl)phenyl]methyl][3-[3-(trifluoromethylthio)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[2-fluoro-5-(trifluoromethyl)phenyl]methyl][3-[3-(trifluoromethylthio)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[2-fluoro-5-(trifluoromethyl)phenyl]methyl][3-[3.5-difluorophenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[[[2-fluoro-5-(trifluoromethyl)phenyl]methyl][3-[cyclohexylmethoxy]-phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-difluoromethoxy-4-pyridyloxy)phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-trifluoromethyl-4-pyridyloxy)phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 20 (2R)-3-[[3-(3-difluoromethoxyphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-difluoromethoxyphenoxy)phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(3-trifluoromethylthio)phenoxy]phenyl][[2-fluoro-5-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 25 (2R)-3-[[3-(4-chloro-3-trifluoromethylphenoxy)phenyl][[2-fluoro-5-(trifluoro-methyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-trifluoromethoxyphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-isopropylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 30 (2R)-3-[[3-(3-isopropylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;

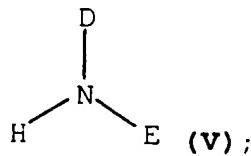
- (2R)-3-[[3-(3-cyclopropylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-(2-furyl)phenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[[3-(2,3-dichlorophenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(4-fluorophenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[[3-(4-methylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-fluoro-5-bromophenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[[3-(4-chloro-3-ethylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-[3-(1,1,2,2-tetrafluoroethoxy)phenoxy]phenyl][[2-fluoro-4-(trifluoro-methyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-[3-(pentafluoroethyl)phenoxy]phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 20 (2R)-3-[[3-(3.5-dimethylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]-methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-ethylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-t-butylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- 25 (2R)-3-[[3-(3-methylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]methyl]-amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(5,6,7,8-tetrahydro-2-naphthoxy)phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(phenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- 30 (2R)-3-[[3-(3,5-dimethylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;

- (2R)-3-[[3-[3-(*N,N*-dimethylamino)phenoxy]phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[2-fluoro-4-(trifluoromethyl)phenyl]methyl][3-[3-(trifluoromethoxy)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 5 (2R)-3-[[[2-fluoro-4-(trifluoromethyl)phenyl]methyl][3-[3-(trifluoromethyl)phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[2-fluoro-4-(trifluoromethyl)phenyl]methyl][3-[3.5-dimethylphenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[2-fluoro-4-(trifluoromethyl)phenyl]methyl][3-[3-(trifluoromethylthio)-phenyl]methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 10 (2R)-3-[[[2-fluoro-4-(trifluoromethyl)phenyl]methyl][3-[3-difluorophenyl]-methoxy]phenyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[2-fluoro-4-(trifluoromethyl)phenyl]methyl][3-[cyclohexylmethoxy]-phenyl]amino]-1,1,1-trifluoro-2-propanol;
- 15 (2R)-3-[[3-(2-difluoromethoxy-4-pyridyloxy)phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(2-trifluoromethyl-4-pyridyloxy)phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[3-(3-difluoromethoxyphenoxy)phenyl][[2-fluoro-4-
- 20 (trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol;
- (2R)-3-[[[3-(3-trifluoromethylthio)phenoxy]phenyl][[2-fluoro-4-(trifluoromethyl)-phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol; and
- (2R)-3-[[3-(4-chloro-3-trifluoromethylphenoxy)phenyl][[2-fluoro-4-(trifluoromethyl)phenyl]methyl]amino]-1,1,1-trifluoro-2-propanol.
- 25
31. A pharmaceutical composition comprising a compound of one of claims 1 through 30 together with a pharmaceutically acceptable carrier.

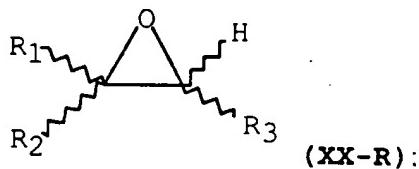
32. A method of treating coronary artery disease or other CETP-mediated disorders in a subject by administering a therapeutically effective amount of a compound of one of claims 1 through 30.
- 5     33. A method of preventing coronary artery disease or other CETP-mediated disorders in a subject by administering a therapeutically effective amount of a compound of one of claims 1 through 30.
- 10    34. A method of preventing cerebral vascular accident (CVA) in a subject by administering a therapeutically effective amount of a compound of one of claims 1 through 30.
- 15    35. A method of preventing or treating dyslipidemia in a subject by administering a therapeutically effective amount of a compound of one of claims 1 through 30.
36. A process for the preparation of compounds as recited in any one of claims 1 or 2 having the Formula (IV):



20    and pharmaceutically acceptable salts thereof, comprising the reaction of an amine of Formula (V):



with an epoxide of Formula (XX-R):



wherein:

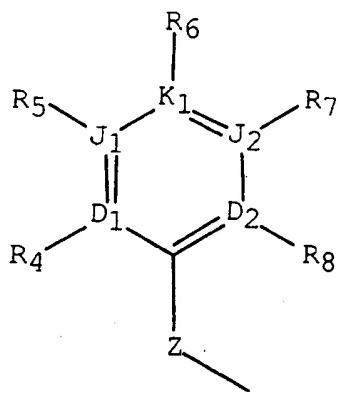
5         $R_1$  is selected from the group consisting of haloalkyl and haloalkoxymethyl;

$R_2$  is selected from the group consisting of hydrido, aryl, alkyl, alkenyl, haloalkyl, haloalkoxy, haloalkoxyalkyl, perhaloaryl, perhaloaralkyl, perhaloaryloxyalkyl, and heteroaryl;

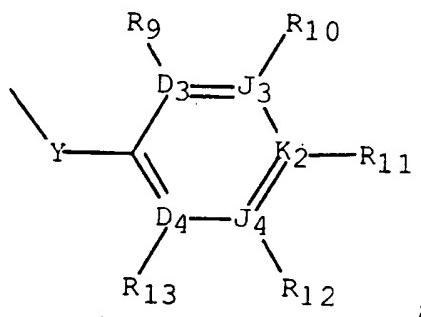
10       $R_3$  is selected from the group consisting of hydrido, aryl, alkyl, alkenyl, haloalkyl, and haloalkoxyalkyl;

D and E are independently selected from the group consisting hydrido, A, and Q with the provisos that E and D are other than hydrido at the same time and A and Q are independently selected, when one of E and D is  
 15      hydrido or when Y and Z are both single covalent bonds, from other than phenyl, 3-methylphenyl, 3-ethylphenyl, 2-methoxy-5-methylphenyl, 2-chlorophenyl, 3-chlorophenyl, and 3-bromophenyl;

A is the Formula:



Q is the Formula:



- D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are independently selected from the group
- 5 consisting of C, N, O, S and covalent bond with the provisos that no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is a covalent bond, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is O, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is S, one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> must be a covalent bond when two of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are O and S, and no more than four of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are N;
- 10 D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that no more than one is a covalent bond, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is O,

no more than one of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  is S, no more than two of  $D_3$ ,  $D_4$ ,

$J_3$ ,  $J_4$  and  $K_2$  are O and S, one of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  must be a covalent bond when two of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  are O and S, and no more than four of  $D_3$ ,  $D_4$ ,  $J_3$ ,  $J_4$  and  $K_2$  are N;

5        Y is selected from the group consisting of a covalent single bond,

$(CH_2)_q$  wherein q is an integer selected from 1 and 2, and  $(CH_2)_j-O-(CH_2)_k$  wherein j and k are integers independently selected from 0 and 1;

Z is selected from the group consisting of covalent single bond.

$(CH_2)_q$  wherein q is an integer selected from 1 and 2, and  $(CH_2)_j-O-(CH_2)_k$

10      wherein j and k are integers independently selected from 0 and 1;

$R_4$ ,  $R_8$ ,  $R_9$ , and  $R_{13}$  are independently selected from the group consisting of hydrido, halo, haloalkyl, and alkyl ;

15       $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_{10}$ ,  $R_{11}$ , and  $R_{12}$  are independently selected from the group consisting of hydrido, carboxy, heteroaralkylthio, heteroaralkoxy, cycloalkylamino, acylalkyl, acylalkoxy, aroylalkoxy, heterocyclyoxy, aralkylaryl, aralkyl, aralkenyl, aralkynyl, heterocyclyl, perhaloaralkyl, aralkylsulfonyl, aralkylsulfonylalkyl, aralkylsulfinyl, aralkylsulfinylalkyl, halocycloalkyl, halocycloalkenyl, cycloalkylsulfinyl, cycloalkylsulfinylalkyl, cycloalkylsulfonyl, cycloalkylsulfonylalkyl, heteroarylarnino, N-

20      heteroarylarnino-N-alkylarnino, heteroarylarninoalkyl, haloalkylthio, alkanoyloxy, alkoxy, alkoxyalkyl, haloalkoxylalkyl, heteroaralkoxy, cycloalkoxy, cycloalkenyloxy, cycloalkoxyalkyl, cycloalkylalkoxy, cycloalkenyloxyalkyl, cycloalkylenedioxy, halocycloalkoxy, halocycloalkoxyalkyl, halocycloalkenyl, halocycloalkoxy, halocycloalkenyl, halocycloalkenylalkyl,

25      hydroxy, amino, thio, nitro, lower alkylarnino, alkylthio, alkylthioalkyl,

- aryl amino, aralkyl amino, arylthio, arylthioalkyl, heteroaralkoxyalkyl,  
 alkylsulfinyl, alkylsulfinylalkyl, arylsulfinylalkyl, arylsulfonylalkyl,  
 heteroarylsulfinylalkyl, heteroarylsulfonylalkyl, alkylsulfonyl,  
 alkylsulfonylalkyl, haloalkylsulfinylalkyl, haloalkylsulfonylalkyl,  
 5 alkylsulfonamido, alkylaminosulfonyl, amidosulfonyl, monoalkyl  
 amidosulfonyl, dialkyl amidosulfonyl, monoaryl amidosulfonyl,  
 arylsulfonamido, diarylamidosulfonyl, monoalkyl monoaryl amidosulfonyl,  
 arylsulfinyl, arylsulfonyl, heteroarylthio, heteroarylsulfinyl,  
 heteroarylsulfonyl, heterocyclsulfonyl, heterocyclthio, alkanoyl, alkenoyl,  
 10 aroyl, heteroaroyl, aralkanoyl, heteroaralkanoyl, haloalkanoyl, alkyl, alkenyl,  
 alkynyl, alkenyloxy, alkenyloxyalky, alkyleneedioxy, haloalkyleneedioxy,  
 cycloalkyl, cycloalkylalkanoyl, cycloalkenyl, lower cycloalkylalkyl, lower  
 cycloalkenylalkyl, halo, haloalkyl, haloalkenyl, haloalkoxy,  
 hydroxyhaloalkyl, hydroxyaralkyl, hydroxyalkyl, hydroxyheteroaralkyl,  
 15 haloalkoxyalkyl, aryl, heteroaralkynyl, aryloxy, aralkoxy, aryloxyalkyl,  
 saturated heterocycl, partially saturated heterocycl, heteroaryl,  
 heteroaryloxy, heteroaryloxyalkyl, heteroaralkyl, arylalkenyl,  
 heteroarylalkenyl, carboxyalkyl, carboalkoxy, alkoxyacarboxamido,  
 alkylamidocarbonylamido, arylamidocarbonylamido, carboalkoxyalkyl,  
 20 carboalkoxyalkenyl, carboaralkoxy, carboxamido, carboxamidoalkyl, cyano,  
 carbohaloalkoxy, phosphono, phosphonoalkyl, diaralkoxyphosphono, and  
 diaralkoxyphosphonoalkyl;

$R_4$  and  $R_5$ ,  $R_5$  and  $R_6$ ,  $R_6$  and  $R_7$ ,  $R_7$  and  $R_8$ ,  $R_9$  and  $R_{10}$ ,  $R_{10}$  and

- $R_{11}$ ,  $R_{11}$  and  $R_{12}$ , and  $R_{12}$  and  $R_{13}$  are independently selected to form spacer  
 25 pairs wherein a spacer pair is taken together to form a linear moiety having  
 from 3 through 6 contiguous atoms connecting the points of bonding of said  
 spacer pair members to form a ring selected from the group consisting of a  
 cycloalkenyl ring having 5 through 8 contiguous members, a partially  
 saturated heterocycl ring having 5 through 8 contiguous members, a

- heteroaryl ring having 5 through 6 contiguous members, and an aryl with the provisos that no more than one of the group consisting of spacer pairs R<sub>4</sub> and R<sub>5</sub>, R<sub>5</sub> and R<sub>6</sub>, R<sub>6</sub> and R<sub>7</sub>, and R<sub>7</sub> and R<sub>8</sub>, is used at the same time and that no more than one of the group consisting of spacer pairs R<sub>9</sub> and R<sub>10</sub>, R<sub>10</sub> and R<sub>11</sub>, R<sub>11</sub> and R<sub>12</sub>, and R<sub>12</sub> and R<sub>13</sub> is used at the same time.
- 5      37. A process according to Claim 36 wherein the reaction is carried out at a temperature of from 0 °C to 100 °C.
38. A process according to Claim 37 wherein the reaction is carried out at a temperature of from 15 °C to 65 °C.
- 10     39. A process according to Claim 36 wherein the process further comprises a solvent selected from the group consisting of tetrahydrofuran, dioxane, methylene chloride, and acetonitrile.
40. A process according to Claim 36 wherein the process further comprises a transition metal salt catalyst selected from the group consisting of ytterbium, hafnium, scandium, neodymium, gadolinium, and zirconium salts.
- 15     41. A process according to Claim 40 wherein the transition metal salt is selected from the group consisting of ytterbium triflate, hafnium triflate, scandium triflate, neodymium triflate, gadolinium triflate, and zirconium triflate.
- 20     42. A process according to Claim 36 wherein the oxirane XX-R is selected from the group consisting of 2-trifluoromethyloxirane, 2-pentafluoroethyloxirane, 2-(1,1,2,2-tetrafluoroethoxymethyl)oxirane, 2-(difluorochloromethyl)oxirane, and 2-(trifluoromethoxymethyl)oxirane.

43. A process according to Claim 36 in which the oxirane has the (R)-chiral configuration at the R<sub>1</sub> and R<sub>2</sub> substituted carbon.

44. A process according to Claim 36, wherein:

5 D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are each carbon;

D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that at least one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is selected from the group consisting of O, S, and N,

wherein no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is a covalent bond, no

10 more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is O, no more than one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> is S, one of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> must be a covalent bond when two of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are O and S, and no more than four of D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are N.

15 45. A process according to Claim 36 wherein;

D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are each carbon;

D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are independently selected from the group consisting of C, N, O, S and covalent bond with the provisos that at least one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is selected from the group consisting of O, S, and N,

20 wherein no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is a covalent bond, no

more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> is O, no more than one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>,

J<sub>2</sub> and K<sub>1</sub> is S, one of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> must be a covalent bond when

two of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are O and S, and no more than four of D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub> and K<sub>1</sub> are N.

46. A process according to Claim 36 wherein D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub>, K<sub>1</sub>, D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are each carbon.

5 47. A process according to Claim 36 wherein:

D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub>, K<sub>1</sub>, D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are each carbon

Y is selected from the group consisting of a covalent single bond and (CH<sub>2</sub>)<sub>q</sub> wherein q is an integer selected from 1 and 2, and (CH<sub>2</sub>)<sub>j</sub>-O-(CH<sub>2</sub>)<sub>k</sub> wherein j and k are integers independently selected from 0 and 1;

10 Z is a covalent single bond;

48. A process according to Claim 36 wherein:

D<sub>1</sub>, D<sub>2</sub>, J<sub>1</sub>, J<sub>2</sub>, K<sub>1</sub>, D<sub>3</sub>, D<sub>4</sub>, J<sub>3</sub>, J<sub>4</sub> and K<sub>2</sub> are each carbon

Y is selected from the group consisting of a covalent single bond and C1-C2 alkylene;

15 Z is a covalent single bond;

R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>13</sub> are independently selected from the group consisting of hydrido and halo;

R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>10</sub>, R<sub>11</sub>, and R<sub>12</sub> are independently selected from the group consisting of hydrido, alkyl, halo, haloalkyl, haloalkoxy, aryl, alkylthio, arylamino, arylthio, aroyl, arylsulfonyl, aryloxy, aralkoxy, heteroaryloxy, alkoxy, aralkyl, cycloalkoxy, cycloalkylalkoxy, cycloalkylalkanoyl, heteroaryl, cycloalkyl, haloalkylthio, hydroxyhaloalkyl,

heteroaralkoxy, heterocyclyoxy, aralkylaryl, heteroaryloxyalkyl, heteroarylthio, and heteroarylsulfonyl.

49. A process according to any of Claims 44 through 48 wherein the reaction is carried out at a temperature of from 0 °C to 100 °C.
- 5 50. A process according to Claim 49 wherein the reaction is carried out at a temperature of from 15 °C to 65 °C.
51. A process according to any of Claims 44 through 48 wherein the process further comprises a solvent selected from the group consisting of tetrahydrofuran, dioxane, methylene chloride, and acetonitrile.
- 10 52. A process according to any of Claims 44 through 48 wherein the process further comprises a transition metal salt catalyst selected from the group consisting of ytterbium, hafnium, scandium, neodymium, gadolium, and zirconium salts.
- 15 53. A process according to Claim 52 in which the transition metal salt is selected from the group consisting of ytterbium triflate, hafnium triflate, scandium triflate, neodymium triflate, gadolium triflate, and zirconium triflate.
- 20 54. A process according to any of Claims 44 through 48 wherein the oxirane XX-R is selected from the group consisting of 2-trifluoromethyloxirane, 2-pentafluoroethyloxirane, 2-(1,1,2,2-tetrafluoroethoxymethyl)oxirane, 2-(difluorochloromethyl)oxirane, and 2-(trifluoromethoxymethyl)oxirane.
55. A process according to Claim 54 in which the oxirane has the (R)-chiral configuration at the R<sub>1</sub> and R<sub>2</sub> substituted carbon.
- 25 56. A process according to any of Claims 44 through 48 wherein the process further comprises a:

- (a) Temperature of from 0 °C to 100 °C;
- (b) Non-protic solvent;
- (c) Transition metal salt selected from the group consisting of ytterbium, hafnium, scandium, neodymium, gadolinium, and zirconium salts.
- 5 57. A process according to Claim 56 wherein the reaction is carried out at a temperature of from 15 °C to 65 °C.
- 10 58. A process according to Claim 56 wherein the solvent is selected from the group consisting of tetrahydrofuran, dioxane, methylene chloride, and acetonitrile.
59. A process according to Claim 56 wherein the transition metal salt is selected from the group consisting of ytterbium triflate, hafnium triflate, scandium triflate, neodymium triflate, gadolinium triflate, and zirconium triflate.
- 15 60. A process according to Claim 56 wherein the oxirane XX-R is selected from the group consisting of 2-trifluoromethyloxirane, 2-pentafluoroethyloxirane, 2-(1,1,2,2-tetrafluoroethoxymethyl)oxirane, 2-(difluorochloromethyl)oxirane, and 2-(trifluoromethoxymethyl)oxirane.
- 20 61. A process according to Claim 60 wherein the oxirane has the (R)-chiral configuration at the R<sub>1</sub> and R<sub>2</sub> substituted carbon.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 99/22120

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 C07C217/90	C07C217/84	C07D263/06	C07D251/16	A61K31/135
A61K31/33	C07C217/82	C07C217/86	C07C239/20	

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07C C07D A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DUNN C ET AL: "THE SYNTHESIS OF FLUORINE-CONTAINING PTERINS" TETRAHEDRON, NL, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, vol. 52, no. 40, page 13017-13026 XP002063653 ISSN: 0040-4020 page 13024, line 4 - line 16 ---	1
A	EP 0 801 060 A (PFIZER) 15 October 1997 (1997-10-15) cited in the application abstract	1, 32-35
A	GB 2 305 665 A (MERCK & CO INC) 16 April 1997 (1997-04-16) cited in the application abstract; claims 1-17 ---	1, 32-35
	-/-	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

11 January 2000

Date of mailing of the international search report

21/01/2000

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/22120

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2 700 686 A (JOSEPH B. DICKEY ET AL.) 25 January 1955 (1955-01-25) cited in the application abstract ---	1
A	EP 0 818 197 A (BAYER AG) 14 January 1998 (1998-01-14) abstract ---	1, 32-35
A	KATAGIRI T ET AL: "Intramolecular SN2 reaction at alpha-carbon of trifluoromethyl group: preparation of optically active 2-trifluoromethylaziridine" TETRAHEDRON: ASYMMETRY.NL,ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM. vol. 8, no. 17, page 2933-2937 XP004090383 ISSN: 0957-4166 page 2936, paragraph 3 -----	1

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/22120

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: 32-35

because they relate to subject matter not required to be searched by this Authority, namely:

Remark: Although claims 32-35

are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

2.  Claims Nos.: 1-31, 36-61

because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

see FURTHER INFORMATION sheet PCT/ISA/210

3.  Claims Nos.:

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-31,36-61

Present claims 1-31, 36-61 relate to an extremely large number of possible compounds/methods. In fact, the claims contain so many options, variables, and provisos that a lack of clarity (and/or conciseness) within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, the search has been carried out for those parts of the application which do appear to be clear (and/or concise), namely according to formula (I) of claim 1, wherein:

X is O

R1 = CF<sub>3</sub>

R16 = free site

n = 1

R3 = R14 = R15 = Hydrogen

Y = C, O, bond

D1 = D3 = D4 = J3 = J4 = K2 = C

the other substituent on the Nitrogen atom is -Ar, CH<sub>2</sub>-Ar, Het, -CH<sub>2</sub>-Het cycle with free sites.

It is stressed that this scope covers the majority of the examples.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/22120

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 0801060	A 15-10-1997	CA 2201988	A 09-10-1997	
		JP 10036348	A 10-02-1998	
		US 5843972	A 01-12-1998	
GB 2305665	A 16-04-1997	US 5714506	A 03-02-1998	
US 2700686	A 25-01-1955	NONE		
EP 0818197	A 14-01-1998	DE 19627431	A 15-01-1998	
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